10¢ A COPY

The OIL WEEKLY

Exclusively Devoted To The Production and Transportation of Oil and Gas

Engineering News Statistics

February 21, 1930 Volume 56. No. 10

FULLY PATENTED

There is only ONE simple pipe & casing Protector

→→→→→ *the original*

BETTIS

"Best bet yet"

What could be simpler than a ring of special processed rubber Tightly gripping The Pipe

→→→

BETTIS PROTECTORS

No Hinges · No Metal · No Pins · No Wire · No Knobs · No Gadgets

Patterson-Ballagh Corporation
Insurance Exchange Building,
Los Angeles

Texas and Gulf Coast Distributors:
BETTIS SALES CO.,
616 Public Nat'l Bank Bldg., Houston

Oklahoma Distributors:
BAILEY AND BECKER COMPANY,
410 Thompson Bldg., Tulsa

New York Office: 39 Cortlandt St.

Carried in stock at Los Angeles, Santa Fe Springs, Ventura, Kettleman Hills, Bakersfield, Coalinga, Long Beach, Tulsa, Houston, Wink, Texas; Calgary, Alberta, Canada; New York City

Axelson Pump Plungers

THERE IS NO ECONOMICAL SUBSTITUTE FOR QUALITY

The Axelson shipping department goes to extremes in preparing Axelson Plungers for transport. Each Plunger is encased in an individual package and securely boxed. No foreign material can contact the mirror-like finish. You receive the Plungers (and other parts too) in perfect condition. They should be kept in their original containers until ready for actual installation.

DIPPED IN

ANTI-RUST SOLUTION

COVERED WITH TISSUE

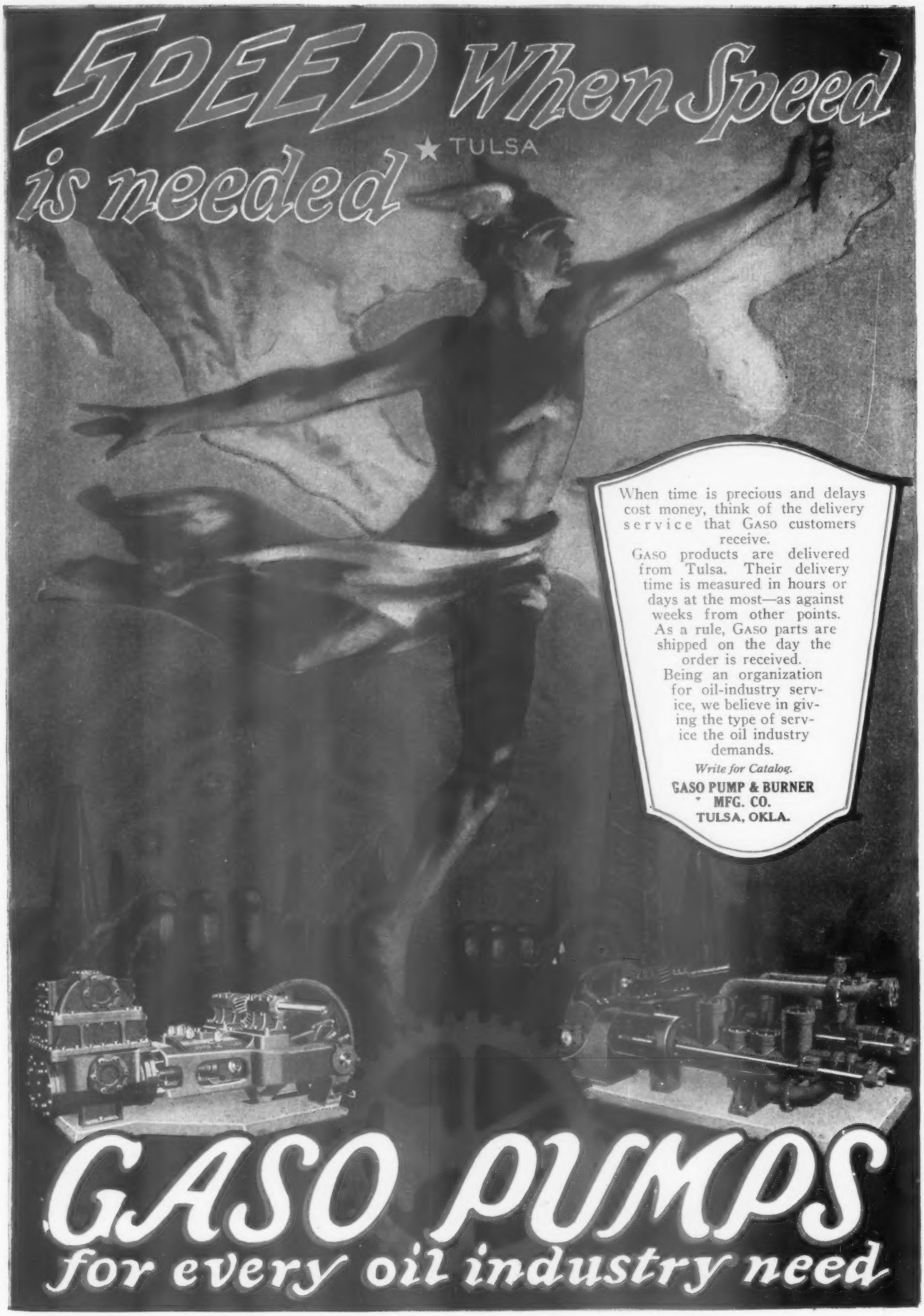
SECURELY BOXED

Axelson Interchangeable Liner Pumps

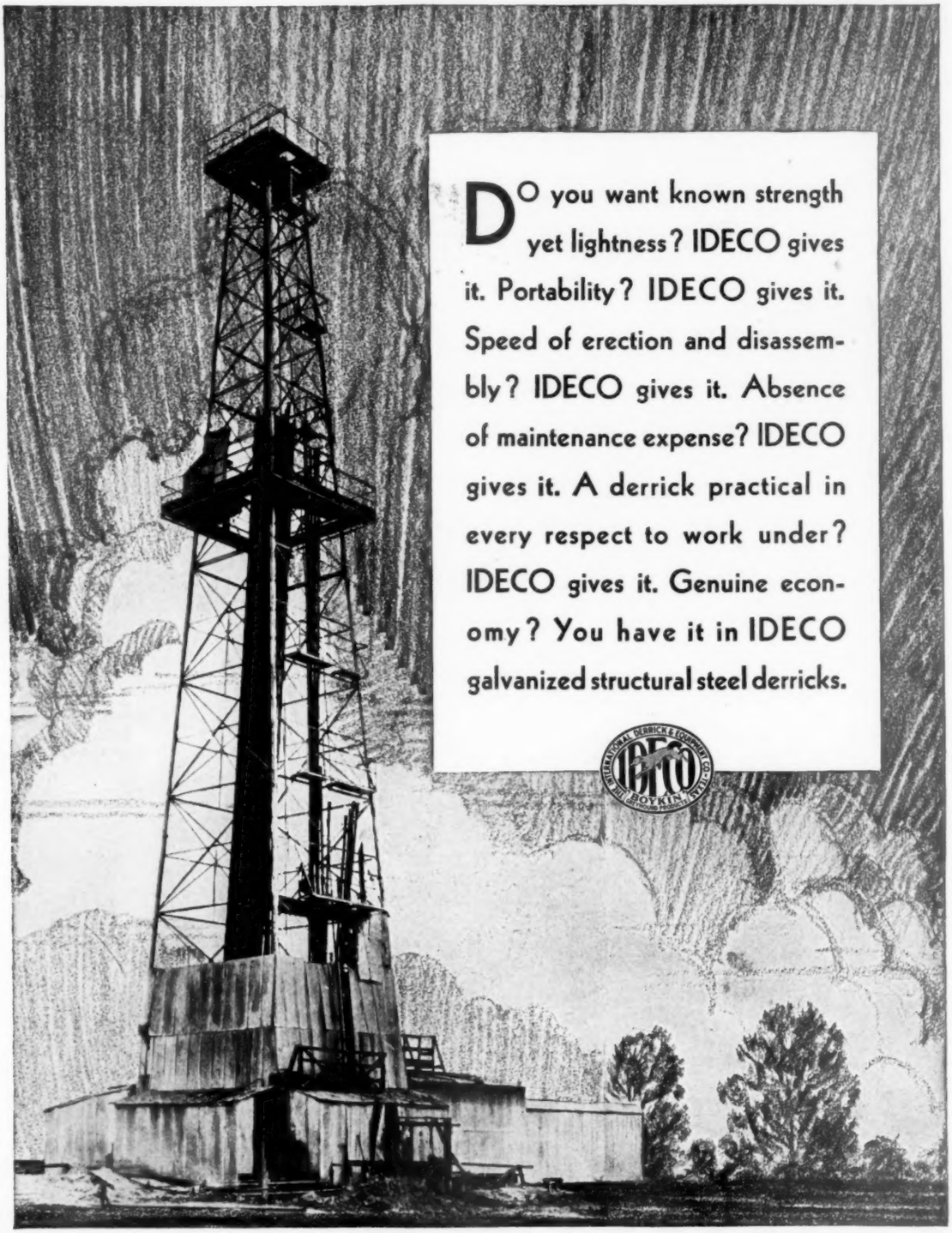
Axelson Manufacturing Co., Ltd.
P. O. Box 337, Los Angeles
Tulsa St. Louis
New York City, 30 Church St.
Mid-Continent and Eastern Distributors:
Frick-Reid Supply Corporation

AXELSON *Interchangeable Liner* PUMPS

The OIL WEEKLY. Issued weekly by the Gulf Publishing Co., 3301 Buffalo Drive, Houston, Texas. Subscription price $1.00 per year; 10 cents per copy. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.


SPEED When Speed is needed
★ TULSA
When time is precious and delays cost money, think of the delivery service that GASO customers receive.
GASO products are delivered from Tulsa. Their delivery time is measured in hours or days at the most—as against weeks from other points. As a rule, GASO parts are shipped on the day the order is received.
Being an organization for oil-industry service, we believe in giving the type of service the oil industry demands.
Write for Catalog.
GASO PUMP & BURNER MFG. CO.
TULSA, OKLA.
GASO PUMPS
for every oil industry need

IDECO



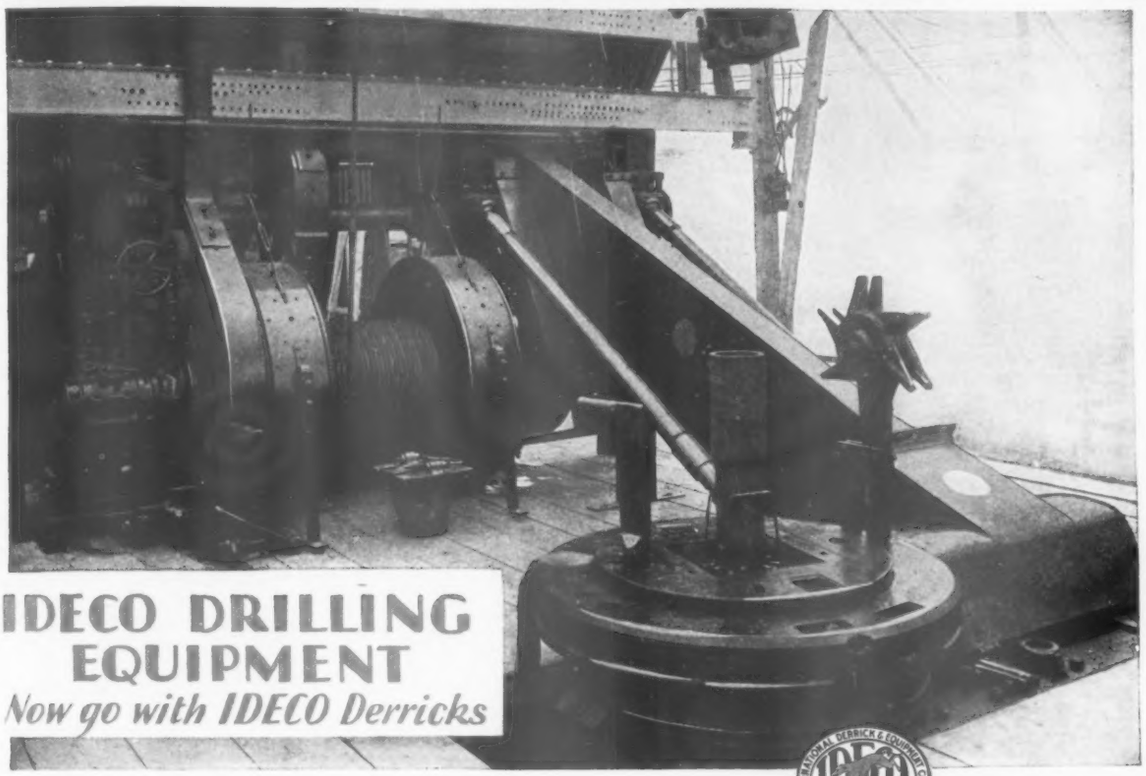
Do you want known strength yet lightness? IDECO gives it. Portability? IDECO gives it. Speed of erection and disassembly? IDECO gives it. Absence of maintenance expense? IDECO gives it. A derrick practical in every respect to work under? IDECO gives it. Genuine economy? You have it in IDECO galvanized structural steel derricks.

The International Derrick & Equipment Company

New York Wichita Tulsa Houston Shreveport Ft. Worth Beaumont Denver Maracaibo, Venezuela

IDECO

BOYKIN ROTARY EQUIPMENT



The IDECO Boykin Greyhound line of Rotary drilling equipment affords the producer exactly what he needs to complete his IDECO Derrick. A Rotary Draw Works with all manner of strength, simplicity and efficiency. A new 27-inch Make and Break Rotary equipped with roller bearings and affording greater speed, smoother operation and complete control. Straight Line Roller Bearing Crown and Traveling Blocks, faster, carrying more weight and easier on the lines.

These products and many others of IDECO are fitting mates to the superb towers above. They insure the permanence of your investment on one location or many.

IDECO-BOYKIN PRODUCTS

Derricks	Reduction Gear Units
Bull Wheels	Chain Driven Rigs
Calf Wheels	Machinery Supports
Band Wheels	Tubing Hoists
Counter Balances	Rotaries
Walking Beams	Countershafts
Pitmans	Traveling Blocks
Sand Reels	Crown Blocks
Draw Works	Tubing Catchers
Draw Work Braces	Standard Steel Buildings

Columbus, Ohio » » » Los Angeles, Cal.

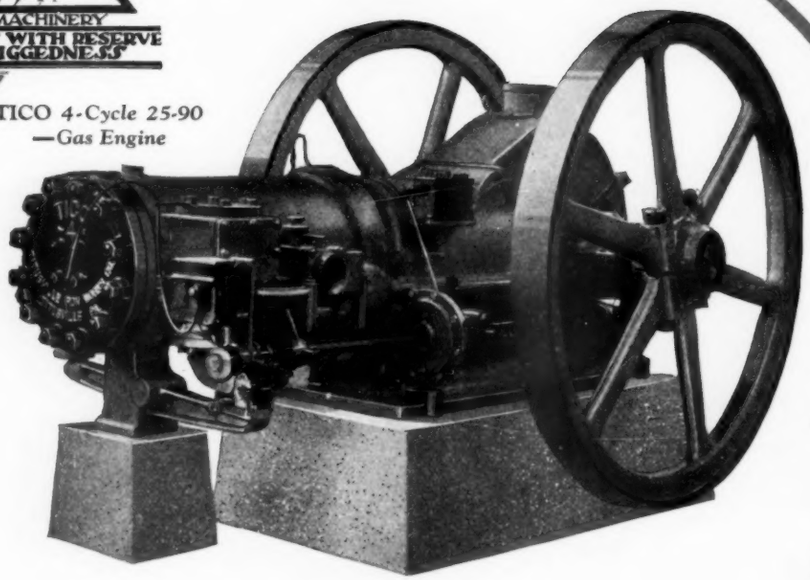
Branches in every important oil field

702

A BIG DOLLAR'S WORTH OF ENGINE

TITUSVILLE OIL COUNTRY MACHINERY
BUILT WITH RESERVE RUGGEDNESS

TICO 4-Cycle 25-90
—Gas Engine



TICO

...FOR EVERY 100 CENTS OF ITS PRICE

THAT'S a quick description of the TICO Engine—the choice of most oil men. The TICO Engine is chosen by oil men because of its performance, reputation and for its good operating characteristics. And that ought to be reason enough why you should make sure of getting your money's worth. Order TICO Gas Engines—the preferred oil field engine equipment.

Unique features of the
TICO *4-Cycle 25-90*
H. P. Gas Engines

Extra long stroke
Easy hand or air starting
All reciprocating parts and governor enclosed oil tight
Patented dash pot insures absolute valve alignment
Two piece cylinder head

THE TITUSVILLE IRON WORKS COMPANY
Division of Struthers Wells-Titusville Corporation
TITUSVILLE, PA.

Mid-Continent Office
503 Exchange National Bank Building
Tulsa, Okla.

For California
California Machinery & Supply Co.
2449 Hunter St., Los Angeles, Calif.

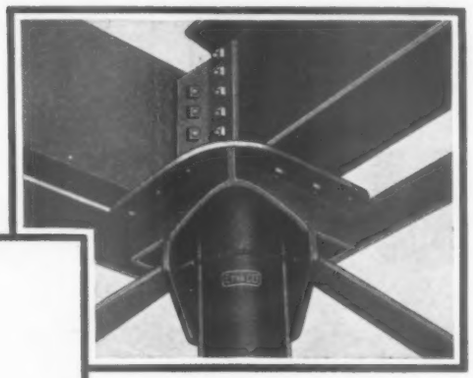
For Kansas, Oklahoma and Northwestern Texas
International Supply Company,
Tulsa, Okla.

For Texas, Louisiana, Arkansas and New Mexico
Mid-Continent Supply Company,
Fort Worth, Texas

For Export: American Steel Export Company, Inc., 535 Fifth Avenue, New York, N. Y.

TITUSVILLE
OIL FIELD EQUIPMENT
GAS ENGINES—PUMPS—BOILERS—DRILLING RIGS—STEAM ENGINES

LEG CAP CASTING secures reinforcing at crown, and compels proper distribution of load between leg and reinforcing. It serves as a firm anchorage for all members meeting at the corner and prevents distortion of the top of the derrick. The large flat top surface supports the water table beams.



136 ft. Hi-Ten demonstration rig erected at the main plant of the Emsco Derrick & Equipment Co at Los Angeles, Calif.
(The top of the flagpole is more than 200 feet above the ground.)

HIGH WIDE and HANDSOME

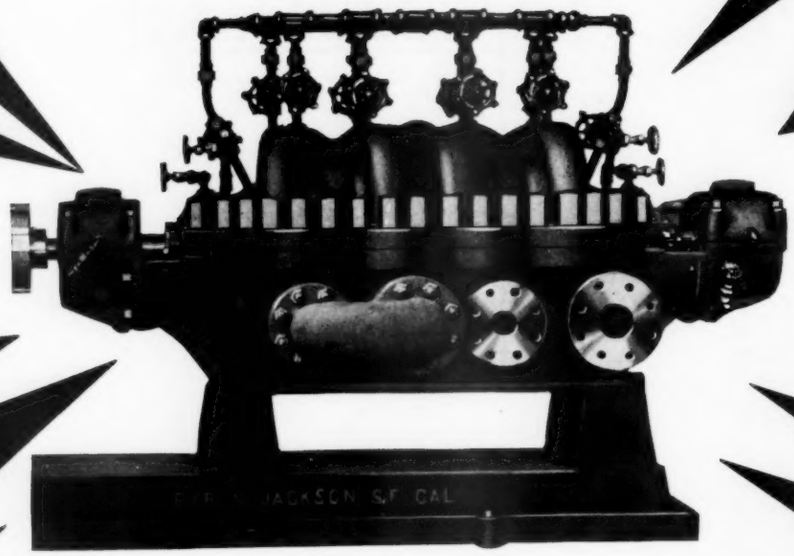
AGE-WORN prejudices and precedents were ruthlessly discarded when Emsco engineers determined to design, from the ground up, a derrick which would be particularly adapted to the new Hi-Ten steel developed by our engineers. All requirements and stresses were carefully analyzed, and all possible conditions of live and dead load were considered. The resulting derrick is so constructed and proportioned as to give a balanced design with the least possible stress on any member in the structure. This derrick sustains a greater safe load per dollar than any other on the market.

EMSCO HI-TEN DERRICK

All Emsco and D+B Products (Except Derricks) Sold Exclusively in Mid-Continent Fields by The Continental Supply Company

EMSCO STEEL EQUIPPED WELLS ARE SAFE

PIPE LINE PUMPS



Byron Jackson multiplex pumps have shattered all precedents in pipe line pumping. They have proved ideal because of their low first cost, small floor space and housing requirements. These pumps need onlylight foundations, therefore are moved easily to new locations. They are built for direct connection to electric motors and steam turbines. The steady pumping pressure forces maximum capacity through a given line. Impellers, designed to handle viscous crudes, give high efficiency with resulting low power costs. Fine materials, heavy construction, and the protection of all wearing parts by renewable steel bushings guarantee reliable operation and inexpensive maintenance. Stocks of pumps and parts at strategic points, and a nation-wide sales and service organization insure the proper application and use of Byron Jackson pumps. May we figure on your next job?

SINCE 1872

BYRON JACKSON CO.

Factories: BERKELEY, Los Angeles, Visalia, Calif.

Branches: NEW YORK and CHICAGO

Houston, Tulsa, Dallas, Detroit, San Francisco, Portland, Salt Lake, Phoenix

BYRON JACKSON

CENTRIFUGAL PUMPS FOR EVERY SERVICE

STRENGTH

The special pressed steel shapes and the web construction in the deck of this 10,000 bbl. (A.P.I.) COLUMBIAN bolted tank afford maximum strength with a minimum amount of metal.

The increased structural depth of its members, and the criss-cross reinforcement of rafter and beam give added strength to an already adequate framework.

The factors of safety in COLUMBIAN bolted tanks are achieved more economically and to a greater saving for the oil man, than in any other tank manufactured.

Detailed information and prices covering the complete line of COLUMBIAN equipment are yours for the asking.

COLUMBIAN STEEL TANK COMPANY

EST'D 1894 — TANKS FOR THE WORLD

1405-1625 WEST 12TH STREET KANSAS CITY, MISSOURI

BRANCHES:

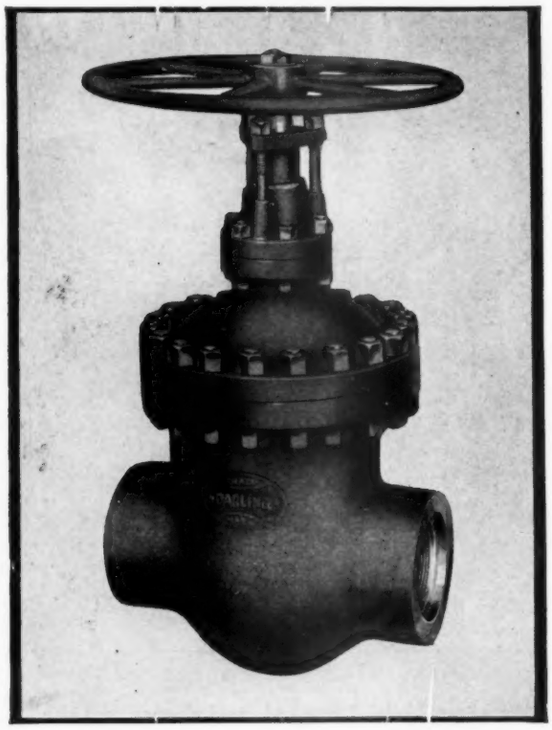
30 Church Street, New York
564 Market Street, San Francisco
408 Chamber of Commerce Bldg., Denver

DISTRIBUTORS:

Booth Tank Builders, Maud, Oklahoma
Haren Tank Company, Ponca City, Oklahoma
National Tank Company, Tulsa, Oklahoma
Service Tank Company, Oklahoma City, Oklahoma
Lancaster Tank & Steel Company, Winfield, Kansas
Federal Tank Company, Inc., Dallas, Texas
Martin Tank Company, Corsicana, Texas
Cypress Tank Company, Inc., Shreveport, Louisiana
California Columbian Steel Tank Co., Ltd., Los Angeles, California
Bertram W. Deane, Port of Spain, Trinidad, B. W. I.
F. E. Richardson & Company, Ltd., Honolulu, Hawaii
General Supply Company, S. A., Mexico City, Mexico
Mexican Trading Company, Tampico, Mexico
Leopoldo Sol & Cia, Buenos Aires, Argentina

Field Contact and Service in South America
P. H. Heeney, Apartado 298, Maracaibo, Venezuela

FOR SAFETY SPECIFY COLUMBIAN



For Peace of Mind

THE uncertainties attending oil production will probably never be eliminated, BUT why increase your risk by using valves of unknown strength?

High pressure wells and other hazardous conditions become less of a gamble when Darling Forged Steel Valves are employed. When you stop to think that these valves are made for working pressures of 1500 and 3000 pounds, you quit worrying whether they will hold out.

Darling Valve & Manufacturing Co.
Williamsport, Pa.
New York Chicago Oklahoma City Houston

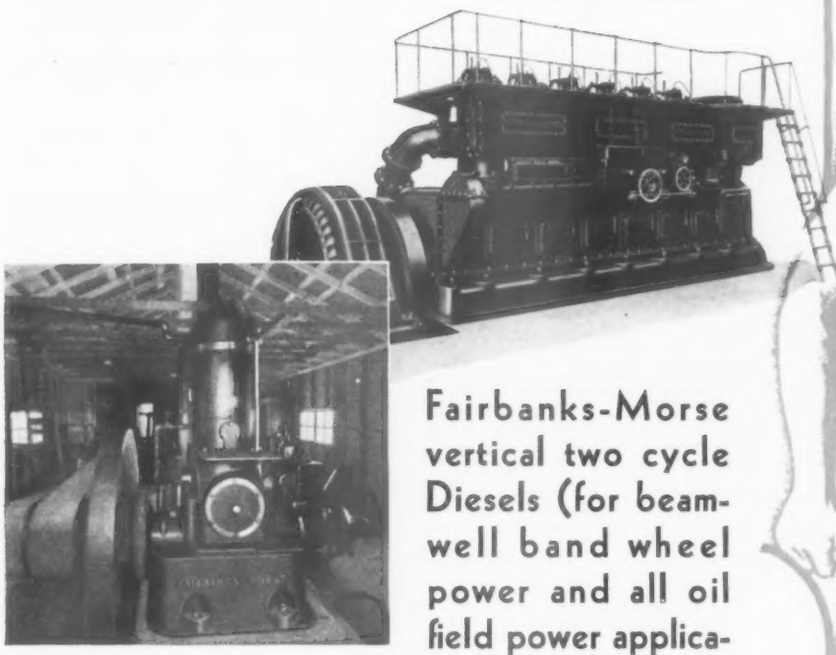
Mid-Continent Distributors:
Frick-Reid Supply Corp. Petroleum Supply Co.
International Supply Co.

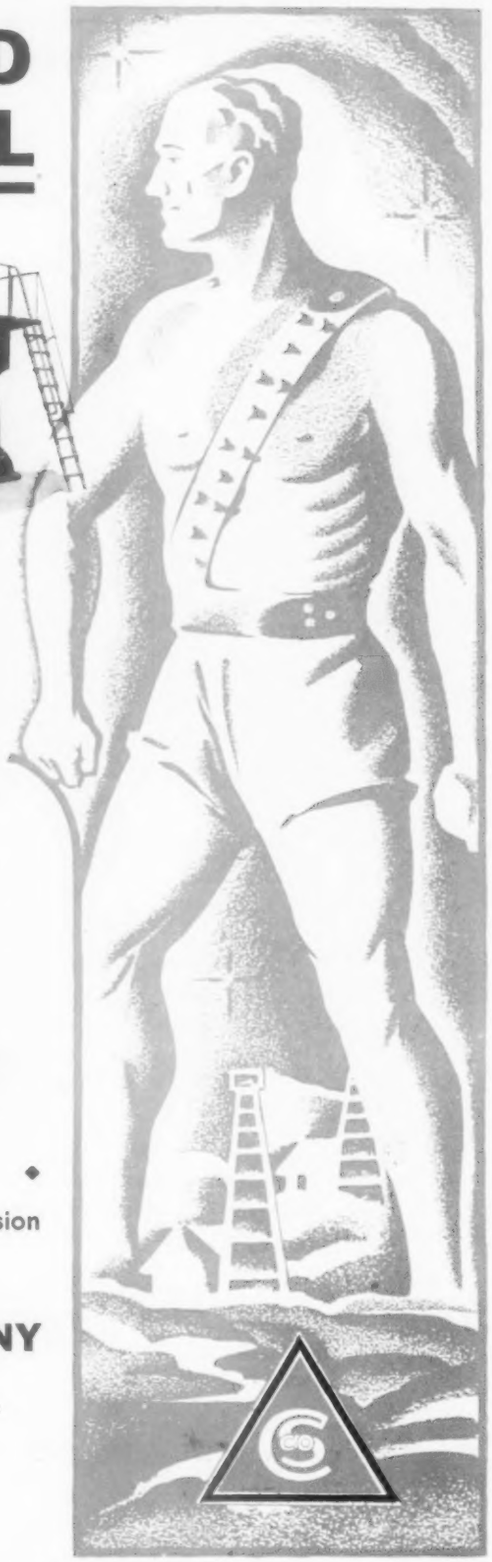
California Distributor:
Petroleum Equipment Company, Los Angeles

Foreign Sales Manager:
H. M. Hein, Room 1405, 152 West 42nd St., New York

DARLING
GATE VALVES

The POWER TREND is toward the DIESEL





Fairbanks-Morse vertical two cycle Diesels (for beam-well band wheel power and all oil field power applications) embody the same principles of economy — reliability and two cycle airless injection simplicity as the larger —

FAIRBANKS-MORSE DIESELS . . . . . .

. . Used for Large Scale Power Generation and Marine Propulsion

"If Continental Sells It . . . . There Is No Better"

THE CONTINENTAL SUPPLY COMPANY
General Offices: ST. LOUIS

THE CONTINENTAL SUPPLY CO., LTD.
224 Traders Building, Calgary, Alberta, Canada

Export Offices:
CONTINENTAL-EMSCO COMPANY, INC.
74 Trinity Place, New York
London Offices: 316-17 Dashwood House, Old Broad St., E. C. 2

CONTINENTAL

Service

WELDS improved, factory floor space conserved, oxygen waste eliminated, acetylene costs cut in half, capacity increased—

These remarkable improvements reported by an important aircraft manufacturer are the result of Linde Process Service.

And this is only one in a long list of Linde triumphs that are being repeated daily in every industrial field.

Linde Process Service is but one reason why Linde Oxygen is the most economical and widely used of any oxygen.

This Service is available without cost to Linde users.

THE LINDE AIR PRODUCTS CO.

Unit of Union Carbide and Carbon Corporation

General Offices: Carbide and Carbon Building
30 East 42nd Street, New York, N. Y.

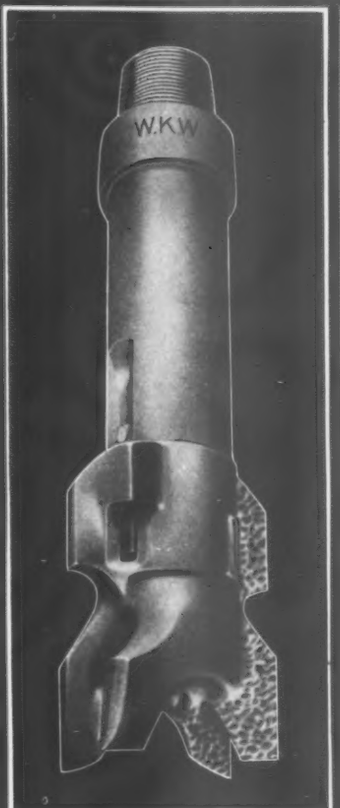
The STRAIGHT HOLE WINS

WIEMAN-KAMMERER-WRIGHT COMPANY, INC. ◆ pioneers in Multiple Tooth Bits ◆ now offer their latest and greatest development ◆ the Improved B-2 and the Model 5 Bits "the perfect combination for straight Hole Drilling."

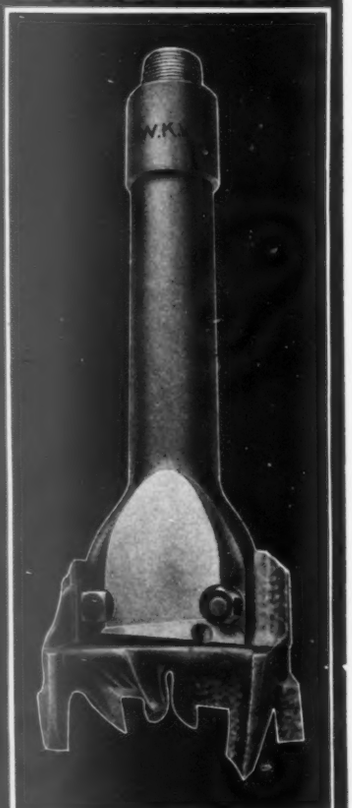
THE Model 5 is designed especially for drilling holes up to ten inches, while the Improved B-2 is for holes larger than ten inches in diameter.

WHILE the two bits vary somewhat in design ◆ the principle is the same, that is ◆ IT CUTS A CORE AND THEN DESTROYS IT. The outermost blades contact the formation first and the inside teeth slice off their portion as the bit is rotating. This type of bit can penetrate faster because only a small contact is made with solid formation ◆ and the core is much easier to destroy owing to its partial isolation from the solid earth.

THE MODEL FIVE



THE IMPROVED B-2

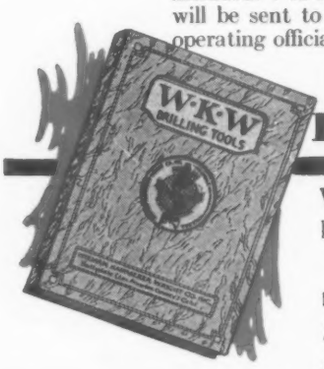


"GO STRAIGHT THROUGH THE EARTH"

A NEW Catalog-

ALL the facts about W. K. W. Drilling Tools have been assembled in this new catalog. New products are fully illustrated and complete price lists data, etc., are included. ◆ A copy of this catalog will be sent to any executive or operating official

upon request



WIEMAN-KAMMERER-WRIGHT CO., INC.
Hollydale [Los Angeles Co.] California

WIEMAN-KAMMERER-WRIGHT CO., INC.,
Hollydale (Los Angeles County) California

Gentlemen: Send me, with your compliments, a copy of your new catalog.

*Name*_____ *Position*_____

*Company*_____ *Address*_____

TORQUE

Seamless for Safety

Foil Him With PITTSBURGH SEAMLESS

TORQUE—the severe twisting stress to which all drill pipe is subjected—is mastered by Pittsburgh Seamless. Severe torsion tests in our own laboratories have proved its marked stamina in withstanding the many stresses of tough service in the oil country. Fine, tough, dense-grained steel, pierced from solid billets and free from any structural weakness, is the basis of Pittsburgh Seamless resistance to torsion and to every stress of hard service. Play safe—with Pittsburgh Seamless.

Storage Yards at Memphis, Tenn. and East San Pedro, Cal. make possible quick, dependable service to all important oil fields.

Pittsburgh Steel Products Co.

Division of Pittsburgh Steel Co.

Pittsburgh New York Detroit Chicago St. Louis Tulsa Houston

Pittsburgh Seamless

Drill P Pipe

Casing Tubing Line Pipe

The new H. C. Smith Type "G" Demountable Drilling Bit — may be run with the side reamer bit body, or with plain body without side reamer rollers.

The H. C. Smith Type "C" Coring Outfit

Our aim, always, is to supply the proper tools for each particular purpose—the tool that will render the most efficient service—tools that actually cost the least—price, durability, performance and general satisfaction all considered. That is why H. C. Smith Quality Tools are constantly establishing new records for speed and economy. That is why experienced operators throughout the oil world unhesitatingly select H. C. Smith Tools to meet all the various operating conditions encountered in drilling, underreaming and coring. If you are not familiar with H. C. Smith Tools, get posted now—write for descriptive folders and records of performance.

Los Angeles
March 16-23
1930

BOOTHS 74 AND 105

H. C. SMITH MANUFACTURING CO., INC.

Los Nietos, California

Branch Offices and Warehouses:

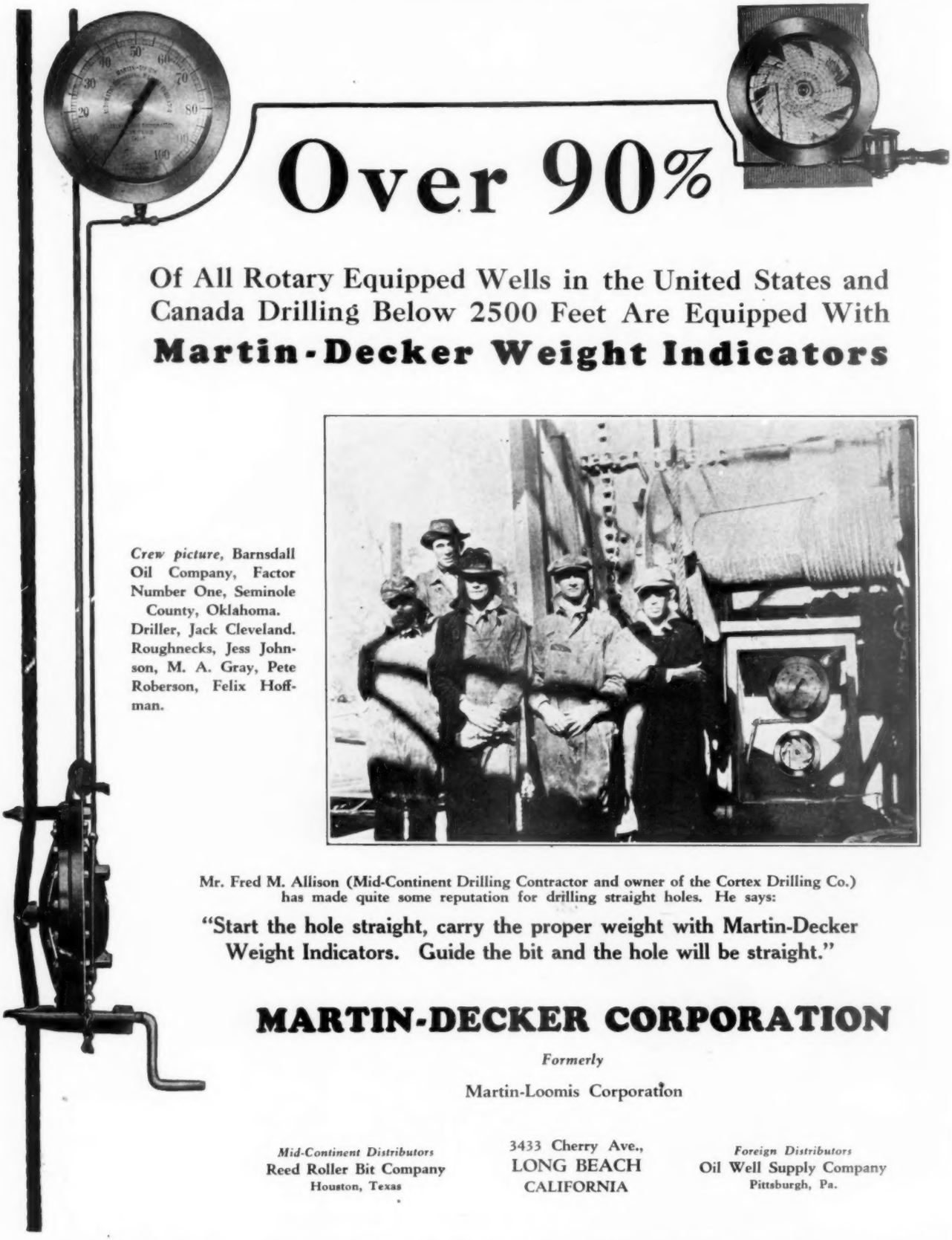
Bakersfield, California — Ventura, California
Taft, Calif. — Kettleman Hills, Calif. — Oklahoma City, Okla.

Cable Address: "Smithco, Whittier"

H.C.SMITH

Quality DRILLING, CORING *and* UNDERREAMING **TOOLS**

MARTIN-DECKER AUTOMATIC RECORDING WEIGHT INDICATOR



Over 90%

Of All Rotary Equipped Wells in the United States and Canada Drilling Below 2500 Feet Are Equipped With

Martin-Decker Weight Indicators

Crew picture, Barnsdall Oil Company, Factor Number One, Seminole County, Oklahoma. Driller, Jack Cleveland. Roughnecks, Jess Johnson, M. A. Gray, Pete Roberson, Felix Hoffman.

Mr. Fred M. Allison (Mid-Continent Drilling Contractor and owner of the Cortex Drilling Co.) has made quite some reputation for drilling straight holes. He says:

"Start the hole straight, carry the proper weight with Martin-Decker Weight Indicators. Guide the bit and the hole will be straight."

MARTIN-DECKER CORPORATION

Formerly

Martin-Loomis Corporation

Mid-Continent Distributors
Reed Roller Bit Company
Houston, Texas

3433 Cherry Ave.,
LONG BEACH
CALIFORNIA

Foreign Distributors
Oil Well Supply Company
Pittsburgh, Pa.

WEIGHT RECORDING, MEASUREMENT AND CONTROL

TITAN

bonds perfectly with parent metal.

adaptable to every type of bit.

easily and quickly applied.

the hardest metal known.

makes any bit drill more hole.

Write for complete information, performance records and prices.

keeps hole to gauge.

withstands impact. Resists abrasion.

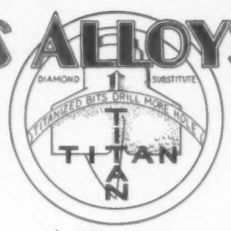
cuts drilling costs.

produced in graded sizes and in tubes.

fully covered by patents. Infringements will be prosecuted.

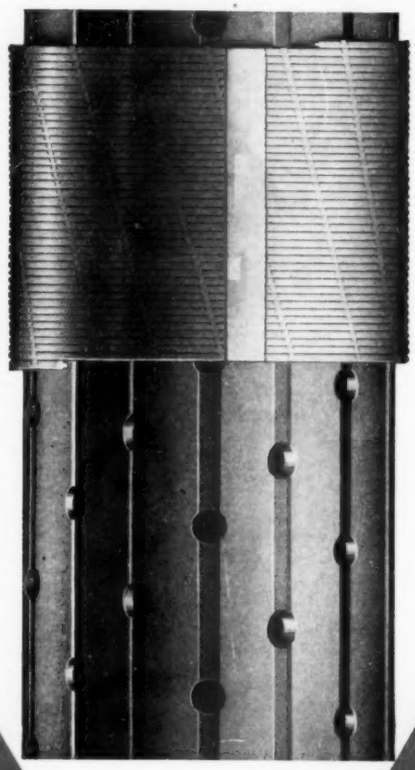
MILLS ALLOYS, INC.

3202 So. San Pedro Street



Los Angeles, California. U.S.A.

TITAN *Metal and Tube Titan* METAL



FAST *STRONG*

GETTY Grooved Type

THE IMPROVED GETTY SOLID WRAPPED SCREEN is the screen you have long been looking for . . . to give you maximum production . . . to control your sand most perfectly. The efficiency and unvarying reliability of GETTY SCREEN has long been known. Ask any Old Timers why they prefer it in wells where the sanding problem is serious.

The superior method of construction developed in the Getty Factory consists in rolling the mesh of the screen into the T-head of the wire, forming solid, substantial, square-faced spacing lugs. During the coiling process, the wire is under severe tension and strong lateral pressure so as to grip the pipe with great firmness, each coil being itself held in a vise-like grip by the adjacent coils. The wrapping is thereby secured immovably in position.

The accuracy of spacing which characterizes Getty Construction has long been due to accurate standardization, correct methods and careful supervision. Accuracy of spacing with structural strength constitutes a guaranty that GETTY SCREEN will remain accurate after installation in the deepest wells, regardless of the grief encountered while passing down by the rocky walls of crooked holes. The abrasion on the wires due to dragging against walls of the hole has little or no effect.

All the exterior surface is a screen. The construction is such as to provide for the greatest possible degree of freedom for the travel of fluids from the point of entry to that of discharge at the interior of the pipe.

Write for complete information on this Superior Screen.

FRED I. GETTY

JENNINGS, LA.

FEB 24 1930

©CLB 72687

A Gulf Publishing Company Publication

The OIL WEEKLY

Member Audit Bureau of Circulations

VOLUME 56, No. 10

FEBRUARY 21, 1930

Edited Weekly at Houston, Texas

SPENCER W. ROBINSON, EDITOR

TABLE OF CONTENTS

Special Features

Controlled Gasoline Supply—The Key to Oil Prosperity 21
By H. J. Struth

Valuation of Flood Oil Properties 25
By E. A. Stephenson and I. G. Grettum

California Oil Leaders Take Public Into Confidences 28
By Brad Mills

The Billion Barrel Pool 30
By James H. Gardner

Does Florida Promise Oil? 32
By Edward A. Hill

Civic Organization Endorse Oil Tariff Move 75
By Warren Baker

Regular Departments

Advertisers' Index 122
Markets-Production-Crude Prices 39
United States Production Estimates 46
Crude Oil Price Quotations 42
Completions for Past Week in All U. S. Fields 82
Permits Granted for New Wells 88
Wildcat Drilling Reports from All Important Areas 94
News from California Fields 65
North and West Texas Field Notes 57
Gulf Coast Field Development Notes 60
Oklahoma-Kansas Field Notes 53
Personal Mention—Men You Know 49
Louisiana-Arkansas Development Notes 64
New Equipment, Catalogs, Bulletins, Books 117
Squeaks from the Bull Wheel 120

Copyright, 1930

Published Weekly

by

GULF PUBLISHING COMPANY

OFFICE OF PUBLICATION

3301 Buffalo Drive, Houston, Texas

R. L. DUDLEY, *President*

A. L. BURNS, *Gen'l Manager*

SPENCER W. ROBINSON, *Editorial Director*

J. KENT RIDLEY, *Managing Editor*

NEW YORK: Room 613, 250 Park Avenue Dick Swinsky, Manager.

PITTSBURGH: 703 Park Bldg., W. W. Pigue, Manager.

CHICAGO: 624 S. Michigan Ave., O. R. Waller, Manager.

LOS ANGELES: 416-417 Haas Bldg., W. E. Green, Manager.

TULSA: 913-916 Hunt Bldg., J. F. Carter, Jr., Manager.

FORT WORTH: 203 W. T. Waggoner Bldg., H. H. King, Manager.

Issued Friday of each week. Single copies 10 cents. Subscription price: Domestic $1.00 a year, Foreign $1.00 a year. Subscription restricted to those engaged in the producing and pipe line branches of the oil business or the manufacture and distribution of oil field supplies. Advertising rates on application.

Speed

SAFETY..... EFFICIENCY

"Oilwell" Hercules Sucker Rods

"Oilwell" Speed Sucker Rod Elevator

An "Oilwell" Safety Sucker Rod Hook, an "Oilwell" Speed Sucker Rod Elevator and "Oilwell" Hercules Sucker Rods make an installation that operates with maximum efficiency, speed and safety. The Hook is heavy enough to handle the longest string of sucker rods and will not open until the automatic locking device is released by hand.

The body of the "Oilwell" Elevator is reversible. Bail supports are part of the body and there is no complicated mechanism such as toggle, hinges, etc. Sand or paraffin cannot clog the protected locking pins.

"Oilwell" Sucker Rods conform to A. P. I. standards. Each rod is upset and made from one piece of weldless steel—heat treated. Furnished in two styles—box and pin, or pin and pin with coupling.

For further information inquire at any "Oilwell" branch store.

"Oilwell" Safety Sucker Rod Hook

OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

Volume 56, No. 10 *February 21, 1930*

The OIL WEEKLY

A GULF PUBLISHING COMPANY PUBLICATION

Controlled Gasoline Supply
The Key to Oil Prosperity

By H. J. STRUTH*
Houston, Texas

PRESENTATION of this paper before the American Institute of Mechanical and Metallurgical Engineers is particularly timely, in view of developments in the direction of production curtailment. The facts and conclusions brought out herein furnish the producer with a completely rounded out picture of conditions in the refining branch of the industry and show what can be expected to constitute normal crude demand from that source this year. This paper is really a sequel to Mr. Struth's article on crude production curtailment which appeared in the January 31 issue of The Oil Weekly, since it forms the basis of his survey of necessary crude production for 1930, as outlined in that article.

A GLANCE into the immediate future of the refining industry, and a retrospective view of 1929, cannot fail to emphasize the need for effective measures of control of refinery still runs. With oil producers alert to the need for control of the crude supply, it has become more than ever necessary for refiners to complete the movement toward stabilization by concerted determination to maintain still run schedules within the limitations prescribed by the demand for gasoline. The outlook for continued growth in the demand for gasoline appears to be well sustained by a preliminary survey of requirements for 1930. In fact, it is apparent that the industry will be assured of a market for gasoline that will aggregate in volume at least 472 million barrels this year. This indicates a gain in total demand over 1929 of about nine per cent, or about 4.6 per cent less than the gain recorded during 1929 over 1928, which amounted to 13.6 per cent. Despite the indicated increase in gasoline demand this year it is apparent that little, if any, more crude will be required than last year. This is shown in Table 1 presenting estimates of gasoline demand and probable crude requirements for 1930.

At 40 per cent gasoline recovery, the above represents a maximum crude conversion of 990 million barrels, or a daily average for the year of 2,712,000 barrels.

Year after year, the refining branch of the petroleum industry has been found guilty of running crude to stills greatly in excess of normal requirements, resulting in alternate periods of market depression. A review of the situation during the past year not only discloses a serious overproduction condition but also that unnecessary additions to refined oil storage proved to be the direct cause of declining prices, at a time when the market was in a position to respond to a favorable statistical position. The folly of continuing to run excessive quantities of crude through refinery stills is perhaps best illustrated by the fact that such action last year cost the industry, roughly, $105,000,000, representing the difference between the actual money received from the sale of motor gasoline in the domestic market and the money that might have been attained on the basis of prices obtaining during the preceding year. This is shown graphically in Figure 1, presenting a curve of wholesale value of motor gasoline for the three leading marketing groups over a two-year period. The figures inserted on the chart show that although the total revenue increased as a result of a larger volume, the average price was $.0067 less during 1929 than during 1928. In view of the unusually large demand for gasoline last year, it is apparent that even slight effort to control the volume of crude processed at refineries would have resulted in a comparatively more favorable financial result, at least comparable with results obtained during 1928. The fact remains, however, that if it had not been for the unprecedented demand experienced last year, the industry would have entered this year in far worse condition. As it is, the statistical position at present is far from satisfactory.

TABLE 1
Preliminary Survey of 1930 Gasoline and Crude Run Requirements

	Millions of Barrels
Domestic gasoline demand	397
Foreign Gasoline demand	75
Total indicated demand	472
Natural gasoline content	53
Net gasoline from crude	419
Imported gasoline	13
Net gasoline required from refineries	406
Indicated excess stock Dec. 31, 1929	10
Maximum production required	396

The fact that wholesale prices began to slump in the midst of the season of peak gasoline demand offers sufficient reason for the industry to inaugurate a concerted drive against producing more gasoline this year than is indicated to represent normal market requirements. One sure way to accomplish this is for the refining industry to establish a "dead line" of still runs for the United States, based upon indicated demand, imports and actual excess storage of gasoline. A carefully prepared schedule of normal crude runs for 1930 is presented in Table 2 and is offered as a suggestion to the industry, as a basis for nation-wide curtailment. In suggesting such an ideal for the industry it is, of course, realized that the degree of successful attainment depends not only upon concerted action by the refining industry but also upon the reasonable limits sanctioned by national and state laws.

Guide to Normalcy

Having established a "dead line" for the industry in the United States as a whole, it is then possible to "break down" the sum total on a monthly basis to include each major refining group, which

*Petroleum Economist, The Gulf Publishing Company.

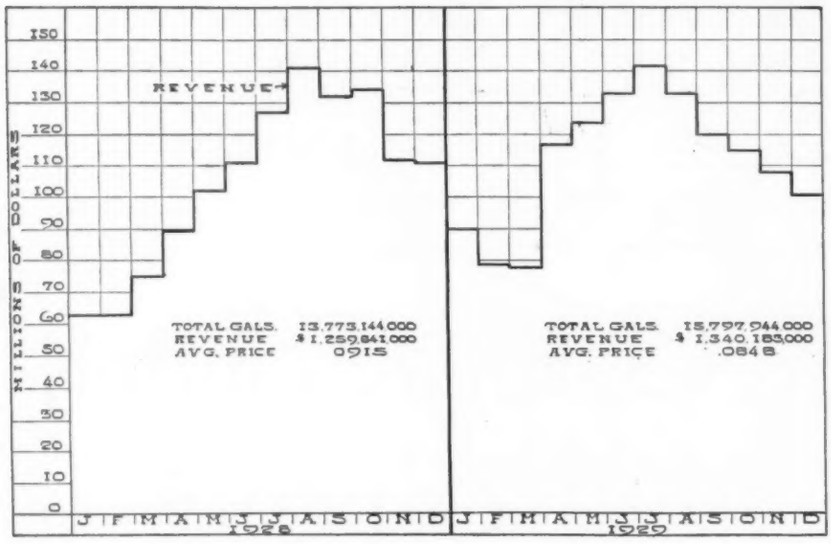


FIGURE 1

Wholesale revenue from domestic gasoline consumption 1928-1929. *Based upon composite price of* 58-60 *gasoline at refineries in Pennsylvania, Oklahoma-Kansas and California*

can, in turn, be prorated to smaller groups in the various refining states, and even down to individual plants, if necessary. Assuming that the suggested rate of monthly crude runs to stills will adequately supply this year's gasoline requirements, as well as take care of the indicated surplus accumulated last year, it is logical to assume that the adoption of this or a similar method of curtailment would readily lead the industry to a fair degree of stabilization this year. In fact, I believe that the majority of those who give study to the conditions outlined will agree that unless some "dead line" is established this year, gasoline will command even lower values this summer than those obtaining last summer. Figure 2 presents a graphic view of the indicated normal course of refinery still runs this year, as well as showing the cumulative "dead line," beyond which the refining industry cannot afford to process crude, without inviting further demoralization of the refined oil market structure. This is further amplified in Figure 3, showing what the writer has designated as the petroleum industry's guide to normalcy for 1930. Since the industry will undoubtedly continue to import crude from South America, this chart contemplates the probable utilization of foreign crude oil by

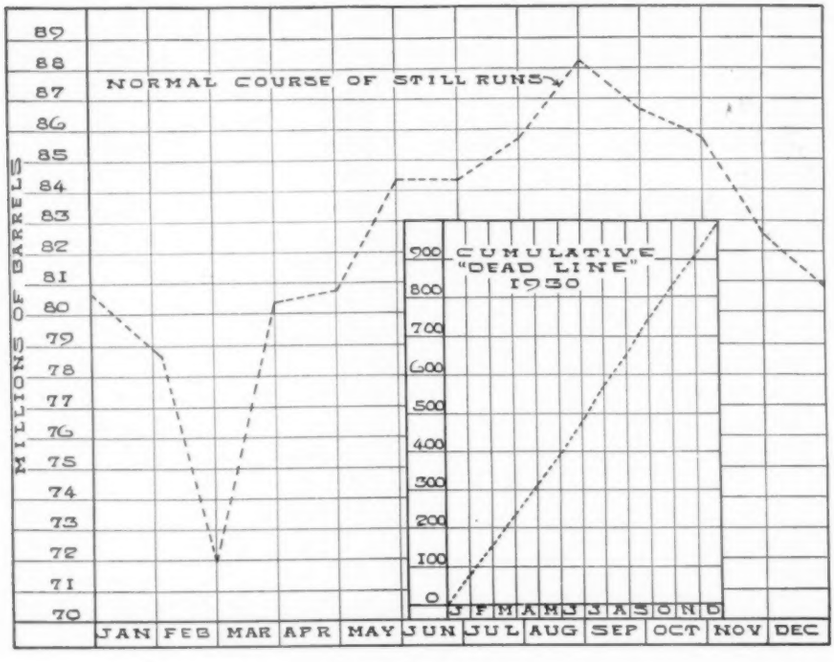

NORMAL COURSE OF STILL RUNS
CUMULATIVE "DEAD LINE" 1930
MILLIONS OF BARRELS
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
J F M A M J J A S O N D

FIGURE 2

Estimated normal course of refinery still runs for 1930, *with cumulative "dead line." Curve represents maximum quantity of crude to be processed in order to equalize supply and demand for gasoline*

TABLE 2
Refinery Crude Runs
(Thousands of Barrels)

	Actual 1929		"Dead Line" 1930	
	Total	Cum	Total	Cum
January	78,825	78,825	78,702	78,702
February	72,031	150,856	71,918	150,620
March	80,708	231,564	80,333	230,953
April	80,459	312,023	80,582	311,535
May	84,420	396,443	84,268	395,803
June	84,400	480,843	84,289	480,092
July	85,919	566,762	85,673	565,765
August	86,733	653,495	88,252	654,017
Sept.	84,099	737,594	86,707	740,724
October	88,390	825,984	85,746	826,470
Nov.	81,061	907,045	82,595	909,065
Dec.	80,663	987,708	80,935	990,000
Total	987,708		990,000	

refineries, the net United States crude production figure resolving itself to the maximum quantity required to maintain at least a temporary state of normalcy. Thus, it is apparent that a complete picture of the gasoline situation necessarily includes a composite view of the crude production situation as well. In other words, complete stabilization of the petroleum industry involves equally serious consideration on the part of both refiners and producers, for when one branch is out of balance, the other suffers in direct proportion to the economic influence of either or both upon the market structure.

Increased Refinery Capacity

One important influencing factor in the overproduction of gasoline has been the constantly increasing rate of refining capacity in the United States. Each year finds numerous new plants in operation, while the installation of cracking facilities continues to increase the yield of gasoline and proportionately lower the rate of increase in crude demand. A record of the past five years reveals that the total refining capacity in the United States has increased at the rate of about 200,000 barrels, on a daily basis, each year, whereas, during the past two years, cracking unit installations have ranged nearly twice as large as that figure. In this connection it is interesting to note that refinery cracking capacity in the United States is now estimated to aggregate about 1,772,000 barrels daily. More

TABLE 3
Gasoline Supply and Demand
(Million Barrels)

	Potential Supply	Actual Supply	Demand
1917	104	76	66
1918	136	95	88
1919	136	102	91
1920	165	128	117
1921	176	135	121
1922	218	163	142
1923	297	206	177
1924	369	245	214
1925	440	294	255
1926	500	344	305
1927	519	374	342
1928	588	413	380
1929	667	476	433

than 200 refineries are now operating cracking units in the United States. Some idea of what effect this has had upon the potential gasoline supply can be obtained from Figure 4, which shows the trend of visible gasoline supply in crude stocks, as well as the actual supply available each year. The widening area between actual and potential gasoline supply reflects to a marked degree the constantly increasing recovery of gasoline from crude. In comparison with total demand, this shows the situation that confronts the industry and makes it more and more necessary to effect some reasonable degree of control. Table 3 presents in detail the quantities of gasoline designated as potential and the actual supply as well as demand for each year since 1917.

The infallibility of the law of supply and demand as an influence upon gasoline market price fluctuations is best exemplified by a study of supply and demand ratios. This is clearly illustrated in Figures 5 and 6, which show the trend of wholesale gasoline prices during the past two years in relation to the calculated index which represents the supply-demand barometer. Figure 5 shows the average prices prevailing each month at refineries in Oklahoma, Pennsylvania and California, in comparison with the supply demand ratio for the United States. Figure 6 presents a composite view of the wholesale gasoline market, as it applies to motor gasoline at the three leading refining groups, in comparison with the supply-demand ratio including the influence of crude. In the case of the former, it will be noted that the barometer exerted a decided influence upon the course of gasoline prices during both 1928 and 1929. Even more remarkable contrasts would be obtained by compiling separate barometers for each major refining district, in comparison with market prices obtaining therein. The point to be emphasized in this connection, however, is that a rising barometer invariably indicates a rising gasoline market, but as long as the supply continues to mount there can be little hope for better market prices. Everyone will agree that the range of prices which prevailed during the past summer were not in keeping with the real economic value of gasoline. However, the cause of this is attributed almost entirely to the inability of the industry to maintain any degree of control over the supply. The narrower price range prescribed by the composite curve in Figure 6, in spite of the fact that the barometer indicated higher prices, is ascribed to the conditions that prevailed at refineries, as indicated in Figure 5.

Another factor that has aroused unusual comment during the past year was the influx of gasoline from the West Indies and the increased shipments of California gasoline to the Atlantic seaboard. While it may be true that these sources of low-cost supply have forced refiners and marketers to cut prices in order to meet that competition, it appears somewhat ridiculous to assume that this comparatively small volume which really represents less than eight per cent of the total American gasoline demand could seri-

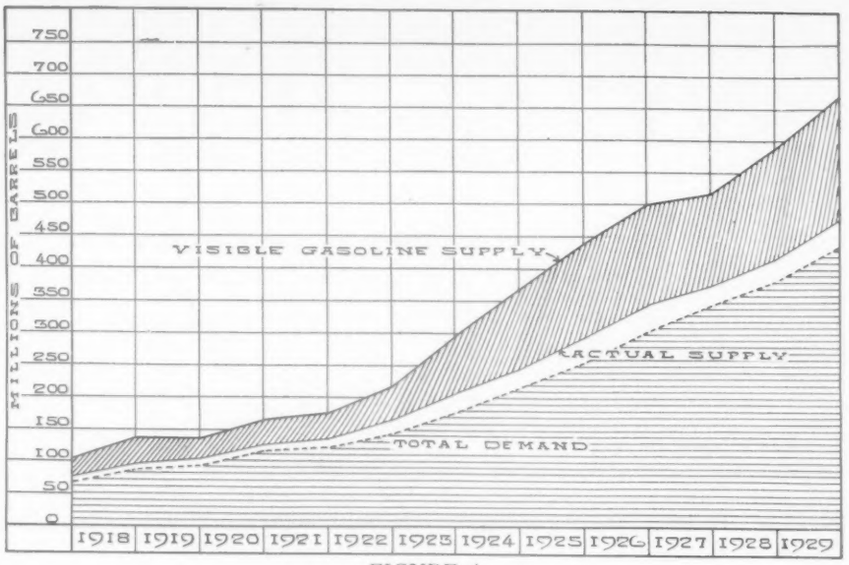


FIGURE 4

Trend of potential and actual gasoline supply, compared with total demand. Visible supply reflects recoverable gasoline in crude stocks on basis of increasing recovery

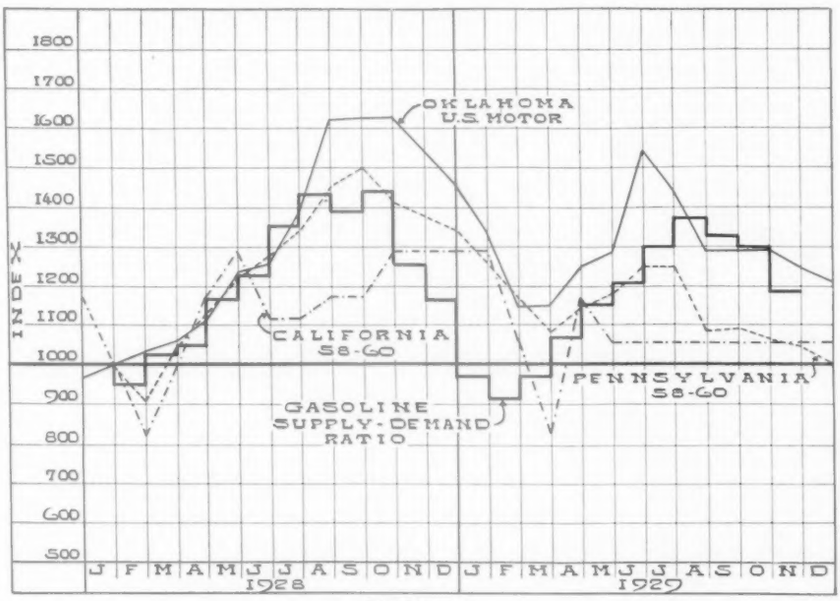


FIGURE 5

Wholesale gasoline prices in relation to influence of supply-demand ratio. Note marked relationship between ratio curve and market fluctuations

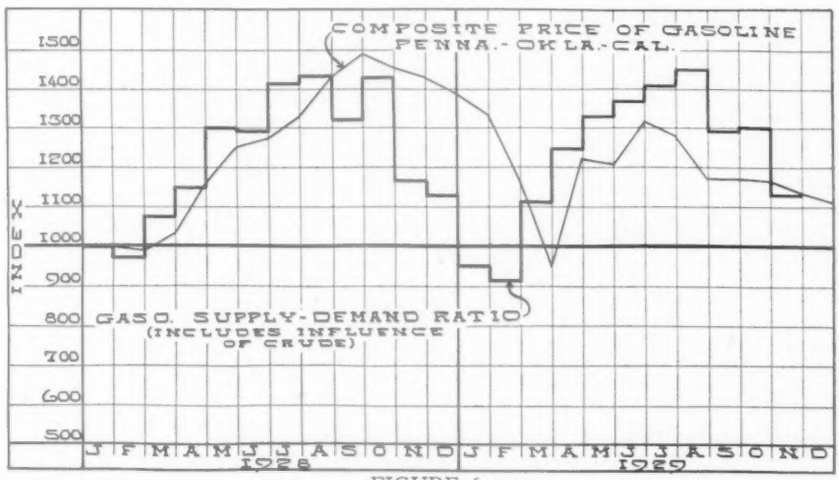


FIGURE 6

Composite price of 58-60 gasoline in Oklahoma, Pennsylvania and California, compared with supply-demand ratio of gasoline, including influence of crude supply

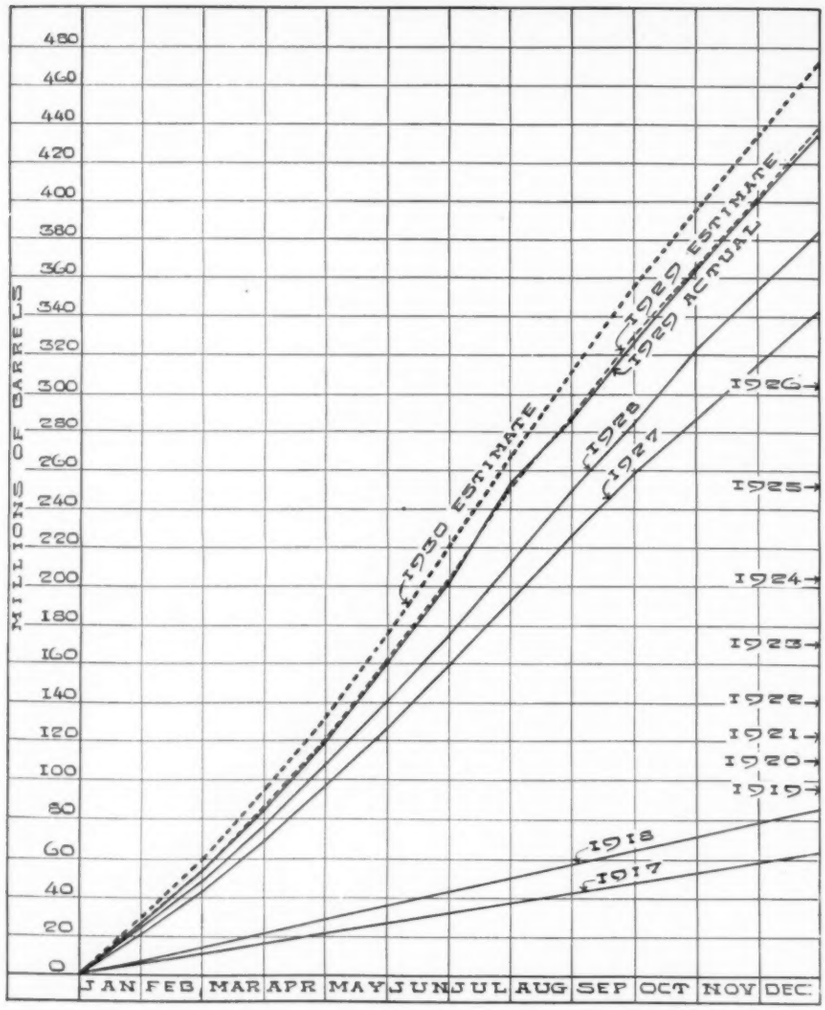


FIGURE 7
Trend of cumulative gasoline demand since 1917. *Dotted lines represent estimates for* 1929 *and* 1930. *Note preciseness with which monthly cumulative gasoline demand was forecast for* 1929

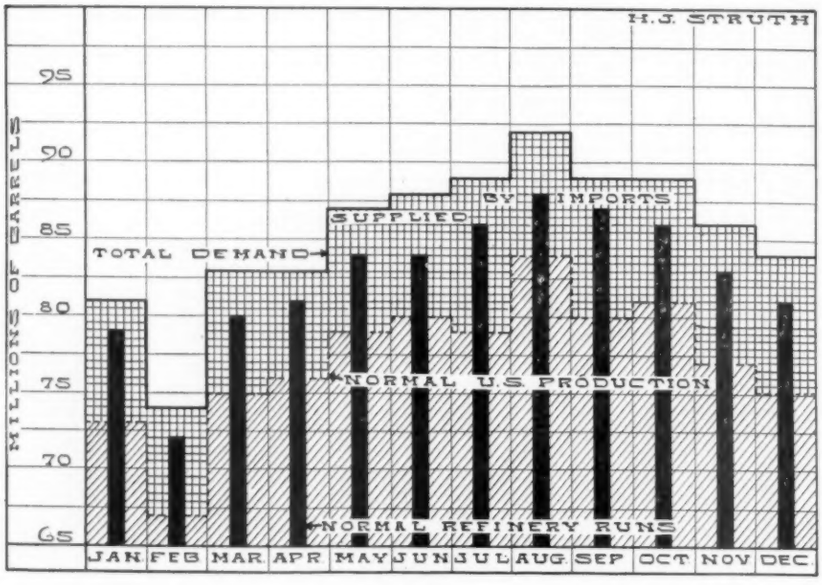


FIGURE 3
The Oil Industry's Guide to Normalcy for 1930. *Shows anticipated crude requirements, refinery runs and maximum crude production required from American producers*

ously affect the markets of a majority of gasoline manufacturers and marketers in the United States. This condition, therefore, simply emphasizes the apparent sacrifices that are made by the industry in the quest for more gallonage. It is quite possible that gasoline imports during 1930 will aggregate about 13 million barrels and California gasoline shipments to the Atlantic Coast may exceed 25 million barrels; a total of 38 million barrels. On the basis of the indicated total demand this year, this quantity will represent about eight per cent of the total. The question before the industry is, "Will competition, represents less than three per cent of the gasoline business in the United States dictate the market value of 92 per cent of the supply?" On the other hand, California gasoline, while used in a competitive degree on the East Coast, cannot be classed as outside competition, since California is as much a part of the American industry as any other section of the country. It is therefore apparent that the industry's foreign competition really only represents less than three per cent of the total volume marketed by the industry. In the face of expanding markets for gasoline abroad, it would seem rather absurd to insist upon an import duty on gasoline of 50 cents a barrel. The competitive angle of the gasoline situation seems to resolve itself to the conviction that the industry still has a lot to learn about modern merchandising of its products. It would seem that a more direct and forceful method of solving competitive difficulties would be to pave new avenues to undeveloped markets, rather than demoralize the economic market structure of a product that commands a world-wide demand. Of primary consideration, however, is the urgent need for better control of the supply, the solution of which rests entirely with the refiner.

Growth of Demand

The phenomenal growth in the demand for American gasoline occupies a conspicuous niche in the annals of modern industry. Within a period of 13 years, the demand for gasoline has grown from a total of 62 million barrels, in 1917, to a potential demand this year of 472 million barrels. Yet, with all of this remarkable growth, the industry continues to complain of inadequate market prices. Overproduction is a term that applies most effectively to this march of events. Last year, and for a number of years for that matter, the writer predicted the gasoline demand for 1929, and pointed out the limits of crude still runs prescribed by the indicated demand. The estimate contemplate a total demand of about 438 million barrels, whereas the actual demand, as revealed by the Bureau of Mines reports, proved to be 433 million barrels. The remarkable degree with which actual demand conformed to the monthly cumulative estimate is illustrated in Figure 7. In this chart are also shown the actual trends of cumulative demand for each

(Continued on page 80)

Paper Presented Before American Institute of Mining and Metallurgical Engineers, New York Meeting, February, 1930

Valuation of Flood Oil Properties

By EUGENE A. STEPHENSON* and I. G. GRETTUM*
Pittsburgh, Pennsylvania

FLOODING operations in the Bradford field have been carried on for so long that this area is now the outstanding illustration of oil recovery by water drive. Although originally the flooding process was largely the result of accidents to casing and tubing it has gradually passed from the accidental to the engineering stage and is attracting the attention of the most efficient technical organizations. Financing budgets and definite development programs have replaced the old hit and miss methods of early days.

Old methods of flooding which succeeded in raising the oil production from one-eighth barrel per well per day to a maximum of two to three barrels per well per day have been superseded by other types of floods, which have raised the production to as much as 80 barrels per day. The ratio of oil lifted to water lifted has also, under the most efficient operations, been greatly reduced.

Along with these changes in the quantities of oil and water produced simultaneous changes in the value of potential flood areas have taken place, many properties have changed hands, the average price per acre for flood territory has risen, greater efforts are being made to ascertain the possible oil recovery per acre and the ultimate life of the wells as well as the most efficient operating conditions, new plans for well spacing and utilization of the water pressure have appeared, and the relation of geologic structure to the production area has been recognized.

Geologic Structure

The general structure of the Bradford field is a large anticline which trends northeast by southwest and has a closure on the Bradford sand of approximately 150 feet near the northeast end of the producing area. Its dips along the flanks are fairly uniform and in general range from 40 to 100 feet per mile on the southeast flank and 10 to 20 feet per mile on the northwest flank. At least three producing horizons are recognized but the only ones which are important from the standpoint of water-flooding are the Bradford sand or Third sand in the Bradford field proper, and the Richburg sand of the Bolivar area in New York State.

In recent years a number of cores have been taken from flooded-out areas and from those which have not yet been subject to water-flooding. Studies of these cores have been made by Prof. Charles Fettke,[1] of the Carnegie Institute of Technology, Paul D. Torrey, the United States Geological Survey and others. These analyses show the sand body as an oil bearing siliceous sand, fine grained and porous, with numerous, thin shale partings. The partings are not continuous over a wide area and have a tendency to give a lenticular character to the sand in certain limited areas. The diameter of the sand grains ranges from 0.04 to 0.3 m.m. with the greater part of the sand less than 0.2 m.m. in diameter. The core studies also show that certain layers of the sand, particularly the upper part, are relatively free from oil, a point which must be recognized in flooding lest large quantities of water be forced into the barren stratum with disappointing results. Along the bedding planes, considerable quantities of fine-grained sericite (imai) occur, which appear to act as an effective screen in preventing vertical migration of flood water.

The porosity of the sand averages approximately 15 per cent and the oil-bearing portion of the sand is commonly less than 30 feet thick. Considerable variation exists as to the degrees of saturation and total oil content but this appears to range from 40 to 65 per cent. In other words, 40 to 65 per cent of the total pore space is occupied by oil. However, these figures are based on a small number of examinations and cannot yet be taken as averages for the entire field.

In spite of the general sheetlike character of the major sand body, the position of the shale bands, their thickness, the size of the grains and the porosity all tend to give the sand a lenticular nature, especially when small areas are considered. This condition has an important influence on the movement of flood oil and water, and on the yield per acre, as well as a bearing on what shall be considered the best method of handling flood wells. It is evident that certain types of flooding, as practiced heretofore, have made it possible for water to by-pass areas or layers of oil-bearing sand and leave important quantities of oil unrecovered. The United States Bureau of Mines has studied three cores taken from areas that were believed to have been flooded out and has estimated on the basis of these examinations that the total oil recovered to date did not exceed 35 per cent of the original content of the sand. However, it is quite possible that these cores contained sections of sand lenses which had escaped action of the water, or that, even though the general area from which they were taken had been flooded-out, the drill holes may have been in areas which the water had passed by without removing the oil. The statement that 65 per cent of the oil is still unrecovered may be open to serious question.

Even though the core analysis has become a valuable means of ascertaining the amount of oil still available per acre, it is not yet possible to use it for the purpose of forecasting the ultimate oil recovery per acre, since many factors other than oil content must be considered.

Flooding Practice

The essential feature of flooding processes consist in the continual introduction of water into the oil sand through a series of intake wells. The water, by capillary action, replaces a portion of the oil which occupies the minute spaces between the sand grains, and which also clings tenaciously to the sand grains themselves. As the water gradually replaces the oil, the latter moves outward in a more or less circular ring around the intake well, moving at different rates in different layers of sand, or even in the same sand where lateral variations in porosity exist. The accumulation of the oil in front of the water gradually results in the development of what is termed the "oil bank." If no further water were added at this time, a more or less stable equilibrium would be reached and the water and the oil would cease to advance, but the continual introduction of water into the sand gradually forces the oil bank forward. Prior to the introduction of any water, the pressure within the oil sand (actually the gas pressure) is so low that its effectiveness in causing movement of the oil is almost zero (as shown by the small average natural production per well per day) but as the oil bank increases in size and as the pressure in the water well is transmitted to it, the pressure of gas dissolved in the oil increases and becomes an effective agent in aiding the forward motion of the oil body. In actual practice, one of the earliest evidences of the effect of flood water on the oil sand is an increase in the quantity of gas produced with the oil. In fact, the amount of gas produced early in the life of a

* Associated with: Ralph E. Davis, Engineer.

[1] C. R. Fettke: Core Studies of the Bradford Sand from the Bradford Field, Pennsylvania. Trans. A. I. M. E. (1929) Petr. Div., 221.

flood is commonly more than sufficient to operate all of the equipment on that part of the lease.

Since the total friction within the sand may finally become so great that forward movement of the water is impossible, a stagnant condition may develop at some distance from the intake wells, and the effectiveness of the water drive at any particular pressure be limited by the friction constant. Accordingly, the oil wells need to be spaced rather closely with reference to the intake water wells, unless the water pressure can be increased. For the most part, the water pressure used has been simply the hydrostatic head of water entering the water wells at the level of ground water. The pressure varies from 450 pounds in the shallow wells to about 900 pounds in the deeper ones. More recently sufficient artificial pressure has been applied to raise the pressures at the oil sand to about 1300 pounds even in shallow sands.

Many of the old oil wells may be so situated as to take advantage of the flooding action and though some of them are operated along with the new flood-oil wells, they are usually ignored in laying out a drilling program.

Basis of Appraisal

The methods of valuation which have been developed take into consideration the following factors:

1. Flooding methods. The investment required varies according to the type of flood used, the depth of the wells, the spacing distance, and size of the property to be developed.

2. The recovery of oil per acre. Recovery per acre is definitely related to the oil content, the porosity, the method of flooding, the spacing program, and the constancy of the water supply.

3. The rate of production per well per day or per year. This rate is in turn definitely related to the method of flooding, the oil content and the porosity of the sand.

4. The operating cost of the well, including royalty, overhead, taxes, etc. Operating cost is usually expressed as unit cost per barrel.

5. The expected price of oil per barrel.

6. A reasonable discount factor which will convert expected annual income into net present worth.

Flooding Methods

Recognizing the necessity for many newly drilled oil wells, various types of flooding programs have been followed. Of these, the following are the most common: (1) the circular flood; (2) the line flood; (3) the five-spot flood with natural hydrostatic pressure or with additional artificial pressure; (4) the five-spot with delayed drilling of the oil wells and the use of either natural or artificial pressures.

1. *The circular type of flooding,* which was the first used in the field, developed largely in an accidental way. It consists of a series of oil wells spaced in a more or less circular fashion around an intake water well. After water has been entering the intake well for some time the oil wells show a gradual increase in production, followed after some months by a decline; when they finally produce so much water that their economical operation is no longer possible it is common procedure to convert them into water wells by allowing the water to enter from the water-bearing stratum. A second row of oil wells is then drilled around the first row and the process repeated whenever the oil production of the wells has declined to such a point that the wells cannot be operated profitably.

The method has certain serious objections in that the oil wells show a small daily production, many times part of the flood oil is swept off the property where it originated, a larger development expense is required during each successive year on account of the larger size of each successive circle, the direction of the flood cannot be controlled and too many wells per acre are required. The method has been almost entirely superseded by methods 2, 3 and 4.

2. *The line-flood method* was developed largely as the result of study and experimental work by Forest Dorn, of Bradford, who pioneered this method while other operators in the field were still using the circular flood. The essential feature of the method is a row of water wells spaced from 150 to 210 feet apart, with a parallel row of oil wells on each side of the row of water wells. The oil wells are staggered, so that the distance between an oil well and a water well is less than that between two water wells (Figure 1).

This method has several decided advantages over the circular type of flooding, in that each oil well is influenced by water-drive from two intake wells, the flooding can be better controlled, a tract of any definite size can be developed at one time and the flood be directed so as to prevent migration of oil to adjoining properties. Cooperative arrangements are frequently made between adjoining operators whereby a row of water wells is drilled exactly on the property line and

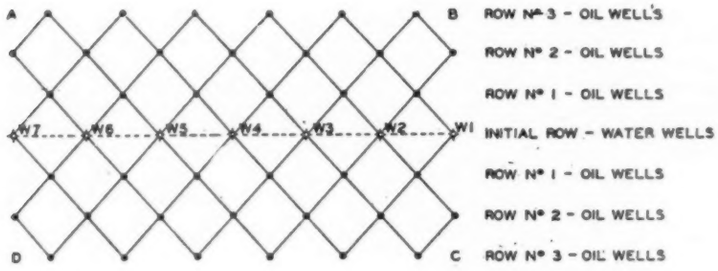


FIGURE 1

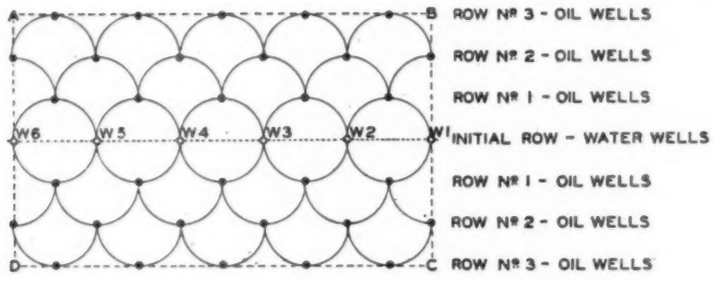


FIGURE 2

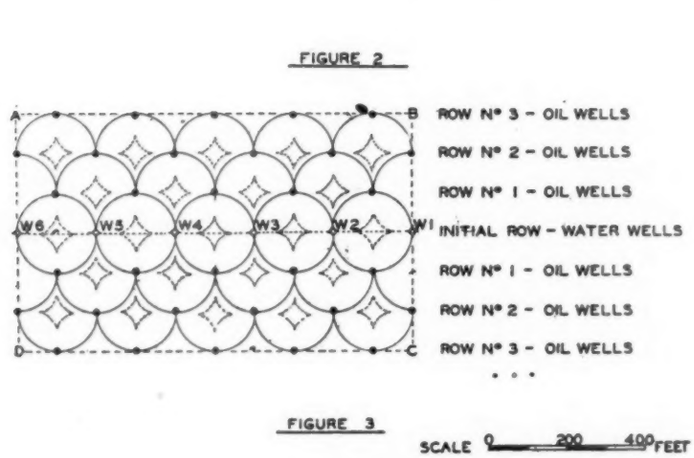


FIGURE 3

FIGS. 1-3.—VARIOUS METHODS OF CALCULATING AREAS DRAINED BY LINE-FLOOD OIL WELLS.

the cost of these wells is borne equally by the two operators. The line-type flood gives much greater yields per well and per acre than the circular flood but has since been found to be less effective than methods 3 and 4.

3. *The five-spot method* of spacing came into successful use about 1927, after having been tried by the Associated Producers Company in 1924 and abandoned as a failure. It involves the drilling of alternate rows of oil and water wells as nearly simultaneously as possible and so placed that four water wells contribute their water-drive toward each oil well. A group of five of these, spaced with the water wells in the corners, resembles the five-spot of a dice (Figure 4).

This method gives a still greater yield per acre, recovers the oil in a shorter period of time, with a higher average daily production, and, with proper spacing leaves less acreage untouched by the water. It also has the advantage that the flood is better controlled and can be confined to the property under development, whether the tract be small or large. Both natural and artificial pressures are used. In the latter case, water pressures of several hundred pounds are applied by means of pumps, and still larger recoveries of oil per acre are obtained than by the use of natural pressures. The wells can be spaced more widely, and the time required for the extraction of the oil reduced. This method has proved profitable in areas where line flooding or five-spotting with natural or merely hydrostatic pressures have not been a financial success.

4. *The delayed drilling method,* a still further modification of flooding practice, was proposed during the past year by Paul D. Torrey. It uses the five-spot method of spacing but the only wells drilled at first are the water-intake wells. After coring the sand and determining its porosity, saturation and thickness, the amount of water required to saturate the sand is calculated and approximately this quantity introduced into the sand through a selected group of intake wells, either with or without artificial pressure. Water is thus forced into the various layers of sand until the forward movement of the water and the resultant accumulation of oil and gas in front of it develop sufficient back pressure to halt further advance in each of the various layers which "take" water. Finally sufficient back-pressure develops to virtually halt the further intake of water at the pressures used.

This general process is indicated by Figure 5. The four intake wells 1 to 4 are receiving water under artificial pressure and the various rings *A, B, C,* etc., represent successive stages in the advance of the water. Where these rings come together the oil bank in front of the water moves laterally toward the central point 5, which is subsequently to be the location of the oil well.

The rate of movement in layers of different porosity will vary and the position of the oil bank in any layer where the porosity is high will be farther away from the intake wells, as at *A,* Figure 6, than it will be in layers of lower porosity such as *B, C* and *D.* However, as the

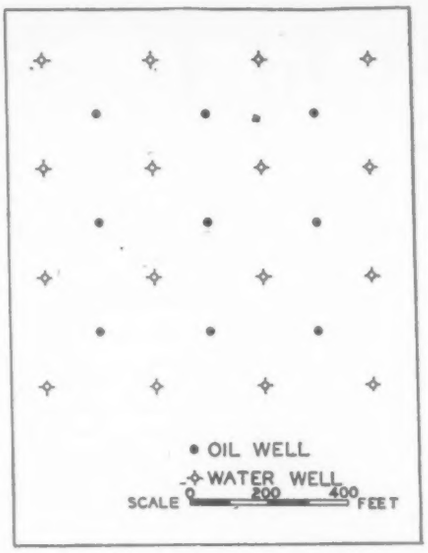


FIG. 4.—TYPICAL SPACING OF WELL UNDER FIVE-SPOT FLOODING.

supply of water under pressure continues, the advance of water and oil in *A* will cease when the back-pressure plus the friction factor becomes equal to the water pressure, while the worward movement in layers *B, C* and *D* will continue until the back-pressure plus the friction factor in each of these layers is equal to the water pressure; at this time the recoverable oil and gas will be banked up ahead of the water, and the sand practically cease to take further quantities of water.

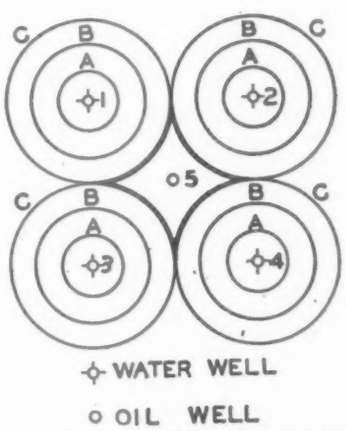
The time at which the oil well should be completed can be approximately predetermined from a calculation based on the porosity, sand thickness, saturation, well spacing and rate of water intake; also, the area from which the oil is swept by the flood is roughly circular around each intake well while the outline of the accumulated oil bank approaches the form of a four-pointed star. The elliptical drainage areas, which occur where an intake and discharge well operate in pairs (see page 78) do not become established until after the drilling of the oil well, by which time most of the area involved may have already been swept free of its recoverable oil.

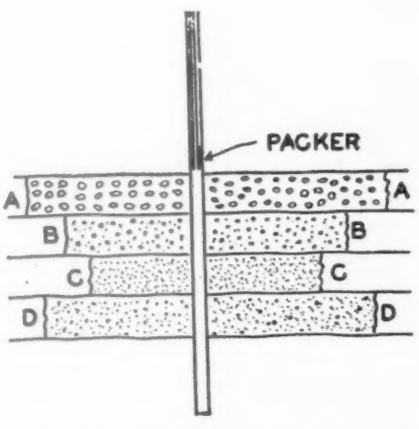
This method appears to have great merit; in one of the few cases where it has been tried the recovery from a single five-spot oil well has been two and one-half times as great as from a near-by five-spot operated under the older system, while the amount of water produced with the oil has been reduced by about three-fourths. It involves no additional investment, should be especially adapted to areas of low porosity, and, though some by-passing may take place, its merits are such that it seems likely to supersede all other flooding methods.

In all cases of flooding, water tends to move more freely through the layers of greatest porosity, and in methods 1 to 4 discussed above, this action tends to free the porous layers of their oil first, while migration through the less porous layers is retarded. Once the oil from the porous layer is removed, that layer yields only water, and this may come through in such quantities as to make further operation of the well unprofitable, even though the less porous layers are still capable of producing commercial quantities of oil. Many attempts to flood oil sands in other localities have failed because the water passed through a porous layer first. It is probable that during the next few years the drilling of delayed five-spots will come into common use, or that some other type of development program may be discovered which will yield additional quantities of oil per acre, but present valuations can not take cognizance of such possible recoveries.

Development Cost.—The development cost is directly proportional to the number of wells drilled per acre and the depth of the wells. Increasing the distance between the wells decreases the development cost, but also reduces yield per acre. Careful investigation of the cost of material and labor entering into the drilling of an oil well, together with a study of the cost of power and pressure plants allocated to a well basis, indicates that the total average cost of development per well can be determined within reasonable limits. Prices per foot of drilling are established, as well as are prices for well and lease equipment, and such fluctuations as take place can be readily ascertained.

(Continued on page 76)





FIGS. 5 AND 6.—PROBABLE ACTION OF WATER IN A "DELAYED DRILLING" FIVE-SPOT.

California Oil Leaders Take Public *Into* Confidence

By BRAD MILLS
Staff Representative

LOS ANGELES.—Closing in on overproduction from all sides, leading California operators are not only working within the industry to reduce the output to 609,000 barrels for the remainder of the year but have enlisted the aid of bankers, various organizations and the general public, in an effort to balance supply with current demands, and at the same time prevent a collapse of the market. The close connection between the oil business and prosperity in and around Los Angeles is being used as an agent for arousing public sentiment in favor of more stringent curtailment measures.

In calling for outside aid, the industry has laid itself wide open for criticism, but conservation leaders believe that any assistance received from industries only indirectly connected with the actual producing, marketing and refining of oil will more than offset any unfriendly criticism voiced.

The Los Angeles Chamber of Commerce held a public meeting February 14, at which both oil men and business men were given chances to air their opinions. The principal object of the meeting was to acquaint leaders of other industries with the necessity of reducing the output of crude oil and with the conservation of natural gas, both held as vital to the prosperity of Southern California. The gathering was a radical departure from the usual meeting of oil men to discuss their own problems.

L. P. St. Clair, executive vice-president of Union Oil Company was the principal speaker at this first public meeting of the various industries. He outlined the situation as it now stands in California and admitted that the industry had failed in its efforts to regulate itself satisfactorily. A summary of his remarks follows:

"It is costing the industry fully 30 million dollars per year to carry the 184 million barrels of petroleum products now held in storage. This cost must be passed on to the consumer. Building of additional storage is absolutely unwarranted.

"Two-thirds of all products are shipped from the state. About 80,000 persons are employed in the industry, the annual payroll being about 172 million dollars. Any depression within the oil business will affect general conditions.

"Conservation has been a problem since Drake drilled the first well. To date, I do not recall a single cooperative movement that has been effective. Selfishness has always been a big factor, and we are all selfish. The oil business has never been able to regulate its own affairs effectively. We must have outside help. Agreements have been made from time to time in different districts, but they have all been violated after a certain length of time.

"And I doubt whether this curtailment movement will be entirely effective. We may be able to bring the output down considerably but I doubt whether the 609,000-barrel mark will be reached.

"The law to regulate gas waste will not and can not, if enforced, work any hardship on the industry. From 600 to 800 million cubic feet of gas is being wasted daily and the fear of hardship is only imaginary. This waste is equivalent to more than 100,000 barrels of fuel oil.

"I don't like to see the oil business sick one day, convalescent another and just over the hump the following day. It ought to be placed on a firm basis and kept there through common sense efforts.

"If curtailment could be made effective, it would be possible either to lower the price of gasoline to the public or to pay the producer more for his crude. There is no danger of an increase to the consumer. The saving made by producing only as much oil as needed would make it possible to sell gasoline even cheaper than during a time of expensive overproduction. There is now no incentive for trying to produce more gasoline from a barrel of crude oil. The present trouble is too many barrels of oil to deal with. It would be economy to produce fewer barrels of oil and find ways to make more gasoline from this reduced output."

A representative of property owners near Venice, where Ohio Oil Company recently discovered a new field, said they "had been starving to death" for years and had finally been rewarded with a "baby field." He said they were all anxious to "get their fingers in the pie" and wanted to know how they could do it.

Henry S. Woolner accused the major companies of excess drilling and said this angle was the key to the whole situation. He made a forceful talk on the "folly" of drilling while production was too high. "stop drilling and so will we," was his challenge to the major companies. He insisted that the state should regulate the price paid by majors for crude. He concluded by saying that if drilling could be stopped, overproduction would disappear.

Flush Fields

Meanwhile tests are under way, or have been finished, in the flush fields of the state. These five- and six-day wide open tests are being made to establish absolute potentials for a basis on which to bring state production down to 609,000 barrels.

The test has been completed in the Elwood field and the potential was fixed at about 65,000 barrels, a much higher figure than anticipated. Operators are busy attempting to reduce production to whatever figure is decided upon as fair for the field. This will probably be fixed at around 30,000 barrels.

Long Beach is in the midst of its wide open test and probably will establish a potential of less than 150,000 barrels. The allowable will be placed around 100,000 barrels, or about the same as the former figure.

Santa Fe Springs is also being tested, with operators having the chance to open up all wells as an aid to their potentials. At the end of the third day the field showed about 237,000 barrels. General Petroleum Corporation's production during the first day was about 52,000 barrels, Standard Oil Company's around 11,000 barrels, Union Oil Company's 39,000 barrels and Shell Oil Company's about 11,500 barrels. The O'Connell zone made a good showing when allowed to flow at a maximum rate, but the Clarke zone fell short of expectations. Field potential should not exceed 300,000 barrels, with 275,000 barrels a more reasonable figure. This is about 80,000 barrels short of the umpire's estimates of two weeks ago.

The test at Ventura Avenue established a potential of about 65,500 barrels, with an extra 6000 barrels completely shut in. This total was slightly higher than most optimistic estimates had indicated.

Maricopa Flats, a recent addition to the flush fields of the state, has completed the test and will be included in the more extensive curtailment plan.

The open-flow test will be concluded

at Seal Beach and Alamitos Heights within three days. The main part of the field, which is controlled by Standard Oil Company, Marland Oil Company and Associated Oil Company, is producing the bulk of the oil and little trouble is anticipated.

After these various open-flow tests are completed, the fact-finding or advisory committee composed of 15 leading executives and engineers will establish the percentage of curtailment to be applied to each field involved, this reduction to become effective immediately. The committee is composed of seven representatives of major companies and eight representatives of smaller companies. They are W. E. Dunlap, Richfield Oil Company; B. J. Parsons, General Petroleum Corporation; J. H. Menke, Standard Oil Company; T. E. Swigart, Shell Oil Company; Emile Kluth, Getty Oil Company; A. C. Rubel, Union Oil Company; Joseph Jensen, Associated Oil Company; R. R. Templeton, Pacific Western Oil Company; Ross McCollom, Signal Oil & Gas Company; A. T. Jergins, Jergins Trust Company; E. T. Stanley, Masmillan Oil Company; E. C. Chandler, Dabney-Johnston Oil Company; Don Weaver, Texas Company; A. H. Bell, Continental Oil Company; F. W. Fortine, Barnsdall Oil Company, and Edwins Higgins, California Oil and Gas Association.

The duty of this committee is to assemble all facts of interest relating to operators affected by curtailment and to have available such information as either operators of the general Committee of Fifteen may require. The umpire will also be advised largely by this committee.

A centralization of the work is expected, with one umpire handling nearly all of the fields. Undoubtedly Paul Grimm will be chosen for the several fields, with Neal H. Anderson serving Signal Hill and perhaps Seal Beach.

P. N. Boggs, chairman of the Committee of Fifteen, has issued a statement in which the gravity of the situation in California is shown. Boggs, with L. P. St. Clair, executive vice-president of Union Oil Company and also vice-president of the American Petroleum Institute, has been a leader in the present movement to reduce production. Some of the salient facts in connection with the conservation movement, as outlined by Boggs, follow:

The potential production of crude oil in the state of California greatly exceeds the market demands, a situation which must be remedied if the industry is to go forward and not backward.

Actual production is running slightly over 700,000 barrels daily.

The amount of crude necessary to run to stills during 1930 in order to supply the estimated demand for products is 609,000 barrels per day. This estimate was reached by employing the best available figures, including those of the American Petroleum Institute, and checked by California economists.

For several years past there has been a shut-in production of approximately 200,000 barrels per day, and since November 2 certain flush fields have been curtailed an additional 150,000 barrels, making a total curtailment of more than 350,000 barrels.

Voluntary curtailment is a questionable enterprise, because of the disposition of the operators to question the facts in the case and the feeling of each that they are curtailing out of proportion to the need therefor.

Unless crude production can be regulated to conform to the market requirements, serious disturbances will be created, which in the end will result in a breakdown of the price of crude oil and its products.

During the past year, the state produced about 292 million barrels of crude, which was 60 million barrels more than was produced in 1928, and storage of all products increased more than 44 million barrels. Total stocks at the end of the year totaled 184 million barrels. These stocks vastly exceed economic requirements, and the carrying charges thereon place the in-

Texas Curtailment Committee Seeks Governmental Aid

FORT WORTH, Texas.—The burdensome task of bringing about a reduction of 100,000 barrels, or more, from the daily output of crude in Texas to wipe out the major portion of the over-production still rests on the shoulders of the general committee. This committee was created during a mass meeting of operators in Fort Worth January 31, and confined its efforts to group conferences and a consultation with state authorities at Austin within the past week. J. D. Collett, Fort Worth operator, is chairman of the committee, and R. R. Penn, Dallas, is vice-chairman. The duties of the committee are restricted to the naming of the fields, or districts, that can be curtailed, and to recommend the amount of cut in daily production, but full cooperation of affected operators has been deferred for fear of running afoul state laws. In the meantime the job assigned to the committee is becoming more complicated each week by new discoveries and fresh outbreaks of major drilling programs.

Conferences held in Austin February 10 by members of the committee with Governor Dan Moody and other state officials is expected to bear fruit in the form of cooperative aid for the producers by the state in enforcing conservation. The governor was confined to his home with a cold, but received four members of the committee for an informal hearing. A brief review of existing conditions in the state's ranking industry was made by the committee, and the governor was informed that the oil producers were helpless to remedy their plight unless cooperative legislation could be obtained. It was pointed out that the oil producers were not seeking to eliminate the anti-trust laws now in effect, but want the aid of the state in curbing excessive production in flush fields when the majority of the affected operators are in harmony with such a plan. A tentative draft of the relief measure sought by the committee was left with the governor in order that the latter may submit same to the attorney general for examination.

State aid has been given Texas operators in the campaign to eliminate wasteful production of oil and gas and excessive output in three West Texas fields—Yates, Winkler and Howard-Glasscock areas—in the form of proration under rules set up by the Texas Railroad Commission. These rules are based on the recommendations of qualified oil men, while the responsibility of enforcing them is placed with a field umpire is elected by the commission. This plan of conservation has been given almost unanimous support by operators in the prorated fields, and a continuation of such aid from the state on a much broader scale is what the general committee hopes to obtain from the authorities at Austin.

A number of members of the general committee met in Houston on February 7 for a conference with operators in the Refugio field, resulting in assurance being given that producers and purchasing companies would endeavor to hold production near the 25,000 barrel daily mark. This field is the leading producing area in the Gulf Coast district, and the market is confined to a single pipe line to deep water terminals at Corpus Christi and tank cars. Large quantities of this oil is being moved in cars to the Great Lakes region. During this session at Houston, the committee was informed that a number of proposed locations scheduled for the recently discovered deep sand horizons in the Humble and Barbers Hill fields would be cancelled indefinitely.

Unanimous support of operators in various parts of the state have not been given the general committee, as indicated by new discoveries and the launching of active drilling campaigns, in a number of flush areas. Lack of support may have been due to many operators having hopes of a restoration of former crude prices by companies that announced cuts in January. Such hopes were shattered late last week when the Sinclair and Prairie Interests decided to fall in line by meeting the price reductions. Danger of further price cuts are now being emphasized, and operators in the Panhandle and North Texas districts served by The Texas Company as a market outlet started the new week off with 50 per cent of their production going to storage at three cents per barrel per month.

dustry in a much weaker condition. Storage facilities are limited and building of additional storage is unwarranted at the present posted prices of crude.

If the balancing of crude production with present demands can only be accomplished by the law of supply and demand, the value of crude and its products will drop to unreasonable figures. This will so retard development that large numbers of men will be thrown out of employment and those industries dependent upon the oil industry will have to reduce their operations with like effect.

The effect of unrestrained production and a subsequent drop in crude prices may be gained when it is brought to the attention of the public that the producing department of the oil business in California employs 24,000 men, with an annual payroll of more than 83 million dollars, and that in the allied industries, wholly dependent upon the drilling and maintenance of oil wells, there are about 35,000 men employed, with an annual payroll of about 64 million dollars. It should also be borne in mind that 67 per cent of crude oil and its products produced in the state are shipped to other states and countries. If the value of these shipments is lowered the income to the state will be greatly reduced.

The gas conservation law enacted by the last legislature would regulate the production of crude oil in keeping with market demands if not held up in a maze of legal technicalities. It appears that if a permanent solution of the problem of overproduction is found and the oil business stabilized, public sentiment will have to be aroused and public expression gained in support of an early determination by the courts regarding the validity of the statute.

(Continued on page 66)

The Billion Barrel Pool

Another Viewpoint of Our Oil Resources

By JAMES H. GARDNER

THE more the writer analyzes the situation with respect to the future oil reserves of the United States, in the light of past estimates and from present knowledge, the larger they look.

There was a time when the million was a unit that looked large and the billion was a unit that must be handled with kid gloves. Everybody was afraid to deal with billions. A billion-barrel oil pool has been considered something not heretofore known and scarcely possible and, if such existed in the United States, it should long ago have been brought to light.

But from drilling in new provinces for both shallow and deep sands and in old provinces for deeper sands, we are just now finding the billion-barrel pools. Take for example, the Kettleman Hills pool in California and the Yates pool in Texas; one a deep pool and the other a shallow pool, both new pools with very slight depletion. On February 6, 1930, Dr. Ray Lyman Wilbur, Secretary of the Interior, in his radio address, published the following day in the Washington Evening Star, stated in speaking of Kettleman Hills that, "While the estimates vary, it is probable that there are between two and one-half billion and four billion barrels of oil rich in gasoline and that there are untold billions of cubic feet of natural gas available."

The writer talked in Washington with Dr. George Otis Smith, director of the United States Geological Survey, who had just returned from California where he heard Carl Beal make an analysis of the probable yield of the Kettleman Hills field. Dr. Smith said the facts seemed to be convincing that the field would likely produce two billion barrels, but that nearly everybody fell off their chairs when the statement was first made. The billion figures knocked them out temporarily until they realized the analysis was one of reason and of logic. In the same manner the estimates on the Yates pool of Texas have been slow in general acceptance, because the billion is too large a unit to be readily conceived and not in line with past experience; but, nevertheless, the cold analysis indicates the probability of five billion barrels of oil in these two pools combined.

The new pool at Oklahoma City is well along in the picture of one of the great major pools with its outer boundary not yet so accurately defined as the two mentioned. But suppose we throw it in for good measure on the five billion barrel estimate for the three pools combined. That alone is nearly half the amount of oil that the entire United States has produced. It would be ridiculous to say that this circumstance does not mean anything in particular. It speaks volumes on the oil resources of the United States.

The writer made the remark to Dr. George Otis Smith that it seemed now that the oil resources of the United States would run into the hundreds of billions of barrels. When looked at in relation to what these three new pools alone will do and the probability of many others like them, together with the extending discovery into new areas and new producing states, as well as deeper sands and deeper territory, the probabilities are that the whole United States can produce a hundred times as much oil as the three pools mentioned. There are many large sedimentary basins which have been drilled only around the edges and discoveries like the Oklahoma City pool and others show large resources exist down within these major basins. There are numerous such basins not yet tested in many states. Deep drilling permits the industry now to explore them and find the fields, for all of them seem to contain minor folds for oil accumulation and probably larger pools than heretofore discovered will be made. It must be admitted that they are coming up larger as the years go by. The burden of proof is on the part of the fellow who says they do not exist and not on him who says they do exist.

There are only three ways that man knows anything; one is from authority, the second is from personal experience and the third is from reason. Absolutely all any man knows must fall into one or more of these three sources of knowledge.

Now our past supposed authority on the oil reserves of the United States, from published estimates, has been no authority at all. It was no basis of knowledge. This country has already produced more oil in a few years than the authority estimated for all time to come. Personal experience has triumphed over supposed authority on the matter of known resources. So we must combine personal experience with the authority of known conditions and draw on the knowledge of reason. We know from reason alone that vast oil resources remain undiscovered in the United States. There is no source of knowledge on the amount of undiscovered oil in barrels, nor in acres. But reason in the light of present knowledge is not severely drawn on in saying that the United States can produce one hundred times as much oil as exists in the three pools recently discovered and above mentioned. Let every reasonable man think about the ratio of those pools to the entire country and draw his own conclusion. Then, if you are still scared of exhaustion of oil resources and desire to hoard our supply as a national policy, think of the supply from hydrogenation of an almost inexhaustible amount of coal and the oil from mountains of oil shale and your fears are likely to pass away.

Whatever our policy is to be, it is my own judgment that it should be based on our having a supply that is sufficient to carry us forward in the profitable development of our own resources by our own people for an indefinite time to come.

"Oilwell" Timken-Equipped Steam Drilling Engine In Service at Earlsboro, Oklahoma.

TIMKEN BEARING EQUIPPED

For Power Insurance

Constant, adequate and unfailing power for rotary drilling was the aim of the Oil Well Supply Company, Pittsburgh, Pa., in designing this 12 x 12 twin cylinder steam engine. Naturally, the crankshaft is Timken Bearing Equipped.

In both steam and gas engines, the crankshaft is the vital link in power application, hence the importance of the crankshaft bearings.

Timken Bearings not only enable the crankshaft to transmit the full power generated in the cylinders by eliminating friction, but also protect the shaft against radial-thrust and shock loads, uneven cylinder pressures, vibration, torsional strain and wear.

Operating and maintenance economies and long life are further emphasized by the exclusive combination of Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS* and Timken-made steel.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Does Florida Promise Oil?

A discussion of possibilities and a review of the record to date

By EDWARD A. HILL
Consulting Geologist, Tallahasse, Florida

DO the formations of Florida exhibit possibilities of oil and gas accumulations? Were they of that proper organic character to warrant the expectation of future commercial supplies? If the sediments are similar to formations throughout regions where oil and gas are produced, are they in reach of the drill and present day equipment? Does the mantle of late Cenozoic and Quaternary covering so obscure the possible structural features that geological or geophysical methods cannot avail to locate the areas of adequate promise?

The foregoing are some of the questions which arise unsought in any critical and extensive examination of the Florida geological province. Also, they involve other queries which are cognate to them, and which emerge as emphatically: that is, exactly what do formations look like, and in what particulars do they vary from the original sediments after they have undergone the catalystic action and metamorphism which attends the genesis of hydrocarbons from them?

Has it at length happened that we know that natural crude petroleum actually is derived from organic sediments? Has our experimentation resulted in such definite facts relating to the origin of oil as to enable us to differentiate the formations from which it could have been made, or in which it may have originated, and from which it has been compressed by diastrophic action or by reason of gravity differentials? Before the migration of the oil into accumulation reservoirs what was the composition of the deposits; after the travel of it out of the originating beds what are they like?

All and singular these questions, and a related thousand of like import, have been asked and in greater or lesser measure answered. The replies have come not only from laboratories, but from actual field study and research; yet many of the queries remain open as to major factors embraced in them or in some of them; some are unanswerable in the light of our present knowledge. None of us know surely just what natural crude petroleum is, nor precisely where or from what it comes.

For the moment it will appear of service to concede the burden of proof of its genesis to be with the oil itself, as against the almost conclusive arguments of them that subscribe to what we know as the "organic theory." If it does at last eventuate that it is a mixed quantity, originating from organic and inorganic material, it goes without saying that there are many who will not be greatly surprised.

But the wildcat drilled in Florida thinks not of such things; he is out to drill wildcat wells, or holes, and he drills them. It may not be ardently contradicted when put to the test that, Florida seems to this writer to be what might justly be called a simon-pure, built-in-the-derrick wildcat country — when a pioneer test well is drilled in the state it is sure-enough a wildcat test.

What the Wildcatter Does Not Think Of

The wildcatter does not think of the economic background of the imminent future of the industry as related to the unmeasurable supplies implicit in the southern half of this hemisphere; or of the ominous black shadows which variously appear drifting northward from that vast empire of the lower Rio Grande of Texas and northern and northeastern Mexico. He does not think of the enlarging promise of the great Pecos country; but did he ascend to prophecy he might describe a vision of many great fields there awaiting the impact of the drills of tomorrow. Nor is it within the scope of his prescience to harbor the thought that, come what may, there are others of equal equipment to his, the wildcatters' qualifications, a weak mind and a strong arm; and that there will still be new territories to conquer after he is gone, though the world supplies outstrip the expanding demand.

No, when the wildcat driller goes out to wildcat he does it. And the fact in its bald nudity brings us again to Florida.

What of Formations in the Florida Province?

In the list of wells drilled for oil and gas in the state, and in water well drillings as well, a tabulation of the more important of which is included in this article, there are 11 from which this writer has examined drill cuttings. Of that number eight were drilled to a depth of over 3000 feet, three of them to over 4000 feet. Not in every test were the recoveries taken with proper care, nor were they in all cases accurately labeled as to depth or carefully preserved. But the supporting evidence furnished quite definitely establishes the rock section of the state as to its integral correlations. The Time Scale and Water Stages are indicated in practicable if not wholly dependable manner. The sketch may of Florida with graphic notations will serve to picture the facts which the sparse drilling has uncovered.

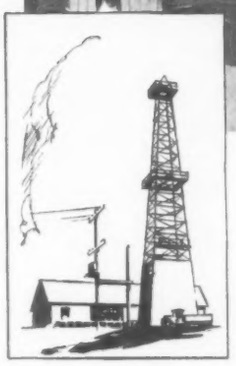
It ought to be remembered that the presence of Upper Cretaceous deposits in the sub-surface formations of Florida were until of late not admitted; more than that, their place in the section was said to be occupied by an old crystalline floor, errors repeatedly and emphatically asserted. Such statements attained a standing which we usually embrace in the category of known facts. Because of the venerable and hoary age with which these and many like utterances were protected they came to be thought of and generally quoted as of authoritative moment. But test drilling supplied refutation admitting of no appeal. Nor did it finally ensue that the Tertiary and overlying blanket of Quaternary were of an even and invariable thickness throughout every portion of the state. A further fact was established in that it was found that there does not exist an uninterrupted monocline reaching out to a great distance southward from the Appalachians, the imposed Mesozoic and Cenozoic strata resting upon an ancient metamorphic basement. Every one of the assumptions were based upon misinterpretations largely residing in the complex of Georgia and Alabama. They are buried in that limbo where there has long reposed the discredited belief, suggested a century since by Agassiz, "that Florida is built upon coral reefs, and the waters of the Gulf and the Atlantic mingle under its stratified sills!"

As a matter of fact, founded in paleontological evidence which is beyond question, three wells drilled and drilling in the state passed through 1600 feet of Upper Cretaceous sediments. The forms passed from the Ripley, the last water stage, correlating in the Time Scale with the Pierre Cretaceous, following downward through older members of the series to the base of the Eutaw, which occupies the relative position of the Texas formations overlying the Woodbine break. What we know as the Tuscaloosa is in part late Lower (Comanchean) and in part the

THE POWER AT PITHOLE CITY

VERSUS

THE POWER OF TODAY



THE Drake Well, the first oil well in America, came in on the morning of August 28, 1859. The news spread like wildfire. A mushroom city sprang up almost between days.. Pithole City. Soon the almost impassable roads leading to this new city where twenty-five thousand daring and adventurous men were scrambling for a place to eat and sleep, were lined with wagons stuck in the mud . . bending under their heavy burdens of boilers, engines, drilling machines, lumber.

Drilling methods have changed. Great power is required for mile-deep wells. Here in the Gulf Coast territory, the largest producing areas are 100% electrified.

Economy in the early days was not considered. Today the big thought is economy and conservation. Petroleum companies are more anxious than ever to cut their lifting costs. No industry in the world today shows as great a record for keeping step with progress as the oil industry.

There is a significant relation between the two great modern industries that have done so much to create the unprecedented per capita wealth of America . . . . . OIL and ELECTRICITY.

GULF STATES
UTILITIES COMPANY

Under Executive Management *of* Stone & Webster, Incorporated

General Offices

BEAUMONT, TEXAS LAKE CHARLES, LA.

first heavy sedimentation of the Upper Cretaceous.

Formations Determined by Gulf Water Stages

Surface and other testimony corresponding with what has been revealed by deep well logs strung out along a vast arc-shaped region, extending from about the latitude of Fort Myers, Florida, to and beyond the Canadian boundary northward of Montana, between limits upon the east and west not fully defined or definable, have proven the approximate areas of the deep water stages of the late Middle and early Upper Cretaceous seas.

That vast expanse of deep water sedimentation certainly included a large part of Florida, that portion of the state surely which lies west of what is called the "High Ridge." It is improbable, however, if that extreme southern tip which was integral to the Antillean land mass, embraced such deep water stage. It is seen that Southern Alabama and Mississippi, Central and Northern Louisiana, Eastern and Northeastern Texas, a part of Arkansas, and Southeastern Oklahoma, have furnished ample testimony of rapid deposition in deep water. Yet the shore lines and the depth of water were modified in Alabama by the old island of that name, and by the Appalachians, if not also by the Cincinnatian Arch—which is not certainly an arch, rather it is a terracing of the strata. Also, it is known that in Louisiana and Arkansas the Sabine Uplift, the Kiamichi, and the submerged Ozarkian limbs, affected the altitude of the sea bottom.

Southward in Texas, the Central Mineral Region (Llano-Burnett Uplift), northward and westward the Bend Arch and the Marathon Fold, affected adversly the water depths. Northward and northwestward the Arbuckles and Wichitas upon the east and southeast, and the Raton Mesas and the massive Cordillera, then emerging, held the deep waters across Western Oklahoma, throughout Western Kansas and Eastern Colorado, into and across Wyoming, though pushed westward by the Black Hills; thence across Montana, Alberta, and far northward where the "tar sands" lie, to the Arctic.

(Continued on page 67)

A. I. M. E. Reviews Progress Of Unit Operation Plan

Engineering division has small attendance but interesting sessions at New York meeting

By H. J. STRUTH

NEW YORK.—Unitization was the subject of interesting discussion at the opening session of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers at the annual meeting which was officially opened here Tuesday. This session was the more enlivened by the presence of Henry L. Doherty who took a most active part in the discussions and emphasized his stand on the principles of unit operation.

Earl Oliver presided over the meeting as chairman and presented a valuable review of the principles of unit operation throughout the world, in a paper prepared by Mr. Oliver and J. B. Umpleby. In part, this paper presented the following conclusions: This division, at its October, 1929, meeting at Tulsa, Oklahoma, resolved: "That the petroleum division of the A. I. M. E. make a special study of the advantages of unit operation and means of promoting it, and that a record of existing results be assembled for general discussion at the New York meeting in February, 1930." To carry out the purposes of that resolution, Josesh Jensen of Los Angeles, was named chairman of a group to report on unit operation in California; Fred E. Wood of Casper, on the Rocky Mountain region; A. W. Ambrose and C. E. Beecher, of Bartlesville, on Kansas and Oklahoma; Frederic H. Lahee of Dallas, on Texas, Arkansas, Louisiana and New Mexico; and Harry H. Hill and E. L. Estabrook of New York on Appalachian region and foreign fields.

"Each of these gentlemen selected as helpers many members of the petroleum division. Their several reports are expected to give a broad picture of the actual status of unit operation through the world. It is believed that in connection with this study a review of the simple principles of unit operation would be helpful. To that end, the following discussion is submitted. It is not to be considered in any sense as the conclusion of the committee, but rather as material submitted for its consideration and represents at this time only the viewpoint of its authors."

The parties who would be benefitted by the general adoption of unit operation and the manner in which they would be benefitted were given by Mr. Oliver. The advantages he said are too numerous to permit individual comment. They can only be listed with a few general remarks.

Perhaps the most widespread erroneous conception regarding unit operation is this: it is monopolistic in tendency and will eliminate the small company and individual operator. As a matter of fact its influence would be the exact reverse of that indicated, according to this authority. Competitive drainage makes vast aggregations of capital necessary in one organization in order to reach out constantly from point to point for a crude supply. If, however, methods of development become such that compact deposits of crude oil can be proved and make available to be drawn upon as needed over a period of years, small refining and marketing companies owning or holding interests in one or more such units will have little necessity, and therefore less tendency, to consolidate with others. Many complete small organizations will be developed rather than a few vast ones.

Unit operation will, of course, be likewise advantageous to the large

(Continued on page 50)

Doherty Again Active On Unit Plan

NEW YORK. — Making his first public appearance since the American Petroleum Institute meeting at Tulsa and following an illness of nearly three years, Henry L. Doherty took an active part at the A. I. M. E. session on unitization. He said that unit operation is not mere geography but contemplates the systematic and economic development of an oil pool through a joint agreement of those physically and financially interested. He felt that many technologists within the industry have not fully comprehended what he has been driving at for these many years, remarking that he has ruined several pairs of pants in trying to put over his thoughts on this matter.

HENRY L. DOHERTY

He also said that he had worked untiringly upon the unit plan even before the world war and as early as 1919 when oil was selling for $3.50 a barrel and many were crying oil shortage he predicted that nothing could save the industry from serious losses later unless something was done to prevent wasteful practices.

One striking remark made by Mr. Doherty was that if it has taken this long to get the industry to realize the need for unit development, he is afraid that he may never see the realization of his ideal.

At any rate, he stated that he is well again and intends to fight this issue to a finish, and whosoever gets in the way will find that he is prepared to put up a good fight. He said that the industry has already lost hundreds of millions of dollars by not adopting his plan of unit development and will lose many more hundreds of millions unless some action is taken to develop oil pools in an orderly and systematic manner. His conclusion was to the effect that there can be no argument as to what the industry should do for the good of itself and the good of the nation.

THE WORLD'S MIGHTIEST BLOWS

EXEMPLIFY THE Guiberson Underreamer

IT IS SAID OF A VERY POPULAR CHAMPION that he could stop a one hundred pound bag, dropped from the ceiling, with an uppercut. Also that he could "lay a man cold" with a six-inch jab to the jaw; that he packed a punch like a mule's kick. Was there ever any doubt of those statements in the minds of those who saw his superb build in the ring?

IT IS SAID OF THE GUIBERSON UNDERREAMER that it strikes a blow as hard as that of a drilling bit, that it will pound away, day after day, and never develop any of the characteristic underreamer weaknesses, —that it is the "world's strongest underreamer." There can be no doubt of these statements in the minds of those who know its construction. There is three times more down-thrust bearing surface. Cutters taper into the body with a dove-tail fit, secured by both bolt and mandrel. Head and tongue are forged in one piece, from a solid steel billet, so insides positively cannot pull out. Oversize cutters ream more hole and may be dressed many times, to exact gauge, on patented dressing form. Get into the top-notch class with a Guiberson Underreamer.

"Better Be Safe Than Sorry"
THE GUIBERSON CORPORATION
Box 1106, Dallas, Texas
California Branch: 1506 Santa Fe Ave., Los Angeles
621 Kennedy Bldg. Tulsa — 321 S. Osage St. Ponca City — 506 Trust Bldg. Newark, O.

6

of a series describing the "World's Strongest Underreamer."

Fully Patented

GUIBERSON

BETTER BE SAFE THAN SORRY

The Washington Viewpoint On Unitization

By DR. GEORGE OTIS SMITH[1]
Director of United States Geological Survey

NO one realizes better than I that the fight against waste, whether physical or economic, must be waged in the front-line trenches. Washington at best is only an observation post, yet viewed from this distance, the advance made in the last few months has been notable and to a high degree encouraging. Five years ago the Federal Oil Conservation Board, in its first contacts with the industry, raised the question "How can new pools be explored without exploitation until new production is warranted by the country's needs?"

Three years and half ago the board, in its first report to the president, paid largest attention, among what it listed as fundamental conservation measures, to "cooperative methods in sane development of new fields." A year ago, in its third report, the board again indorsed as the essential factor in conserving the nation's reserves of oil, "full cooperation in unit control, whether by voluntary agreement or by state enforcement."

The function of this federal agency has been purely fact finding and educational. The oil conservation board early declared that the major part of its task was to help the industry "formulate the broader by-laws in the sense of conservation."

And now, after these five years of eventful history in the oil industry, may I size up the situation as I see it from the Washington point of view? First of all, and fundamental to a successful issue, I have observed in the industry a gradual acceptance of technical opinion as the guide to executive action; and this has at last led to some agreement as to what procedure offers most promise. Analyzed in more detail, this highly desirable progress has consisted in "self-restraint actuated by enlightened self-interest." We see emerging the general desire of oil producers for efficiency in operation, which means low costs and high recovery.

Competition Not Efficiency

As shown by facts presented at this meeting, competition in drilling is in direct opposition to efficiency in oil production, in that such competition increases costs and lowers recovery. The only route to conservation of this natural resource and also of the capital and labor involved in making it available is through unit control, which substitutes cooperative, well planned action for competitive, unregulated activity, forced by the individualism of a small minority of landowners or perhaps by a single operator. Or, in terms of actual experience, development of an oil field and its subsequent operation under unit control means the substitution of majority rule for minority rule, yet the minority enjoys to the full the resulting economic benefits.

So far as it affects the public interest, unit operation of oil properties deserves unqualified approval. It means more oil from the same area over a longer period and at lower costs—that is practical conservation. It means underground storage of oil until it is needed for transportation to market—that is ordinary thrift, avoiding the large economic waste involved in above-ground storage. It means an adjustment of supply to demand, rather than letting surplus supply stimulate excessive demand—that is both good economics and long-range vision.

You may recall that President Coolidge in appointing the oil conservation board said: "Overproduction in itself encourages cheapness, which in turn leads to wastefulness and disregard of essential values."

If gas is considered along with oil, the case in favor of unit operation becomes much stronger. Gas has now come into its own, not only as a commodity of large value to the public and a by-product of large profit to the producer, but also what is of even larger importance, as the most efficient agent in producing oil. The escape of gas is therefore a two-fold waste. And so it is that the new California gas law stands on good technology and good economics. That legislation was sorely needed in a state where in the later part of last year, although nearly a billion feet of natural gas a day was being utilized, as much was blown into the air as was used. In the Kettleman Hills in the same months nearly twice as much was wasted as was used, and now the ratio is even worse. Here, indeed, at present field prices, the gas with its gasoline content is worth much more than even the high grade oil it brings to the surface. But prevention of such waste, which strikes at both the present and the future prosperity of California, is difficult if not well nigh impossible under competitive development and operation of the oil-fashioned type.

A happy sign of the times is the present activity of an engineering committee representing the operation companies at the Kettleman Hills. That committee, including several members of this institute, after study of unit plans adopted or proposed elsewhere, has represented two plans—one providing for centralized control and unit management of the entire field, the other contingent upon full cooperation of the operators in allotting development and "holding production down to the minimum consistent with good practice."

Kettleman Hills

The fact that the Kettleman Hills owners and operators face an injunction proceeding under the California gas law makes opportune this conservation movement, which was specifically provided for in the field agreement of last July. As has been suggested by Secretary Wilbur to the chairman of this committee: "If a properly worked out plan can be made a part of the court action instead of having something arbitrarily put on, it will mean a great deal."

This idea of self-regulation by voluntary cooperative action within the industry has been stressed from the beginning by the Federal Oil Conservation Board. The determination of equities among the owners and operators can best be made by themselves if only the "intense individualists" can be made to see clearly that understrained individual action threatens their own profits. Insolvency is a high price to pay for present freedom of action.

Moreover, the other phase of the question, the assurance that the public interest would benefit by unit control, has been fully discussed in the reports of the federal board. Even in an oil field potentially as large as the Kettleman Hills the possibility of monopolistic effects of widespread extent need not be feared, but any imagined undue and harmful influence upon supply or price could and should be avoided, as was suggested to the board by Mr. Hughes as counsel of the American Petroleum Institute, by bringing the voluntary cooperation "always under appropriate and adequate governmental scrutiny." The California law not only sanctions cooperation of producers, where nature has made the oil pool a unit, but in enjoying waste of gas this new law practically imposes some type of unit control. There need be no fear that observance of natural and economic law is necessarily in violation of statutory law.

[1]Before American Institute of Mining and Metallurgical Engineers, New York meeting, February 18, 1930.

Careful Welding
Assures Uniformly
Strong Pipe
The significance of consistently sound welds in every length of Republic Steel Pipe cannot be over-emphasized . . . for sound welds assure uniform strength, and are the backbone of reliable pipe service. Welds that do not open when the pipe is threaded. Welds that hold together when pressure is exerted either from inside or outside. Tight, strong, solidly closed welds that mean safe, leak-proof piping and lasting, trouble-free service. This is a certainty when Republic Steel Pipe is used.
REPUBLIC
IRON & STEEL CO. YOUNGSTOWN O.
STEEL PIPE

Markets--Production--Crude Prices

H. J. STRUTH, *Staff Economist, Houston, Texas*

Mid-Continent Crude Oil Prices Uniform at Lower Schedule

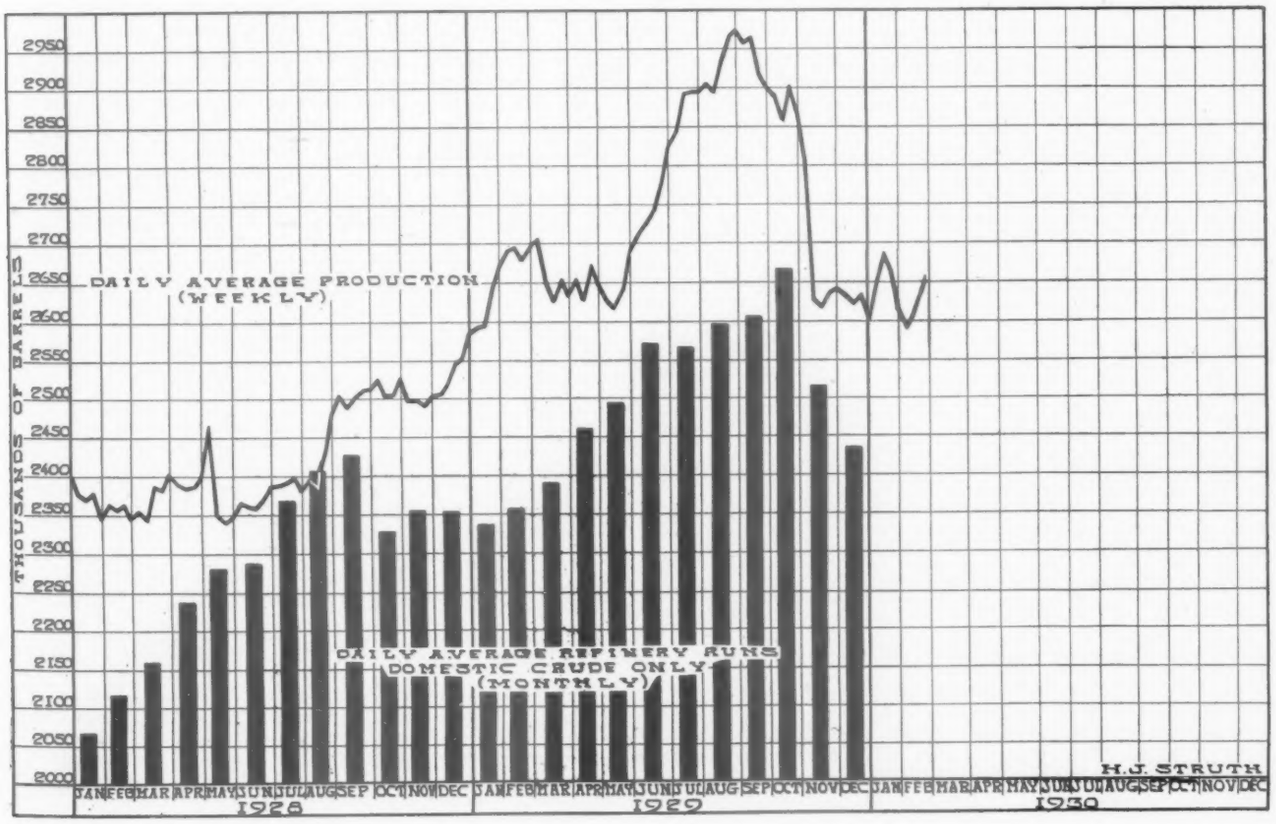
FINAL agreement among all purchasers as to what the price of crude oil is in Oklahoma and Kansas was reached last week while producers were again increasing the output. The word "is" and not "should be" is used advisedly with reference to the price situation, as both Sinclair Crude Oil Purchasing Company and Prairie Oil & Gas Company issued statements in connection with their announcements of meeting the price schedule arranged by Carter Oil Company, in which they make plain that their cutting of the price was to meet competition, and that they do not deem the lower prices necessary. Offerings of crude to their customers at lower prices and competitors of their customers having the advantage of the lower crude, led to the final decision to meet the lower market. Sinclair Crude Oil Purchasing Company announced its cut on February 13 and was followed on February 15 by Prairie Oil & Gas Company, to be followed immediately by all other purchasing agencies which previously were not using the lower schedule.

Other price adjustments, all lower, were made by Ohio Oil Company and affected certain Central States fields and Rocky Mountain fields. Canadian crude also was reduced. Details of these changes are given elsewhere in this issue.

Production Up Again

United States production was again up for the week ending February 15 — 39,150 barrels. California, where open flow tests are being conducted to determine actual potentials while the argument about curtailment is being brought out into public with the hope of gaining public approval, was the star contributor to the increase with 43,100 barrels gain, while Oklahoma was up only 1050 barrels. Texas outside of the Gulf Coast, was down 3950 barrels, with the Gulf Coast up 600 barrels. The Texas decline was offset by increases in two "controlled" fields; Van was up 1200 barrels because of new wells, and Darst Creek shows a rise of 1950 barrels. In the Gulf Coast, Refugio had an increase of 7000 barrels, while Barbers Hill and

Production, Imports and Indicated Consumption of Crude



Humble were slightly down.

Sinclair's Statement

When announcing the lowering of his company's price schedule, H. F. Sinclair, chairman of the board of Sinclair Consolidated Oil Corporation, made the following statement:

"The reductions made today have only been decided upon reluctantly. We regard the reduction as inequitable and a backward economic step, but of course no one company can continue indefinitely to pay higher prices for its raw material than are paid by its competitors. Crude material so valuable as petroleum should not be sold below cost of production. That course, if pursued, would lead eventually to demoralization and loss with no real gain to the community and certainly none to the industry concerned. The oil industry has loyally supported the program of conservation and stabilization fostered by federal and state governments. It is to be hoped that the recent price reduction will not undo the effort toward sane, stable conduct of the industry and impair the spirit of co-operation which had been built up. It is certainly not a step in the upbuilding of general prosperity toward which all industries and all forces have been so urgently invited to contribute."

The statement from officials of Prairie Oil & Gas Company was as follows:

"We regret that it has become necessary for us to follow the price reduction posted by our competitors in the Mid-Continent field. We did not believe such reduction necessary or advisable and now believe that the evils complained of might more easily have been corrected by the various units in the industry making the same effort before that will have to be made now. We cannot afford longer to maintain the price paid by The Prairie Oil & Gas Company for crude oil while our competitors in the field and the competitors of our customers are able to secure adequate supplies at a price less than we were paying. We hope that the producers and refiners alike will continue their councils for cooperation and by concerted effort and mutual cooperation readjust conditions which of themselves will restore the average producer of both crude oil and refined products a reasonable price."

How Last Week's Daily Average Crude Production Compares With Necessary Production for February, 1930

	Necessary Requirements* Month of Feb. (Daily Average)	Actual Prod. Week Ending Feb. 8 1930	Excess
Oklahoma-Kansas	695,637	742,100	48,463
Texas, Arkansas & Louisiana	808,172	952,500	144,328
California	684,959	707,900	22,941
Balance of U S...	190,320	211,300	20,980
Total	2,379,088	2,613,800	236,712

Cumulative Total Production

	Necessary Production To Feb. 8	Actual Production To Feb. 8	Excess
United States	92,286,453	102,466,250	10,179,797

*Based upon potential demand less imports.

Proration in Texas

Price reductions having no apparent effect upon field work and production, the "proration" plan which worked so effectively back in 1924 is being inaugurated in the Texas Panhandle and adjacent North Texas areas by The Texas Company. Acceptance of crude in those areas by The Texas Pipe Line Company was cut 50 per cent on February 17. The remaining half of production is going to storage for account of the producer at three cents per barrel per month. This order indicates that the recent crude price reductions have not yielded the desired results, and is probably a more drastic blow to the individual operator and small companies than a second cut, as it cuts the current revenue from oil production in half, while the storage charges make further inroads on working capital of the producer.

The order issued by The Texas Company follows: "Effective February 17, 1930, The Texas Company will limit purchases of crude oil in the North Texas and Panhandle districts to 50 per cent of the amount of crude being purchased by The Texas Company on February 15, 1930, of the production of wells connected with The Texas Pipe Line Company, unless written notice to the contrary is given to The Texas Company. This company will accept and store all, or any portion of the remaining 50 per cent, subject to its prevailing rules and regulations. The Texas Pipe Line Company will receive oil for the account of The Texas Company, and such storage oil shall be subject to deductions, rules and measurements and title requirements the same as purchased oil."

A similar policy has been enforced by the Humble Oil & Refining Company in Wilbarger County, North Texas district, since January 1, 1930, while Sinclair Crude Oil Purchasing Company also partially applied the order in Wilbarger County beginning on the same date. However, the latter is now making it 100 per cent in the county, except in cases where crude contracts are held with producers to take oil for a fixed period. These two companies have not introduced the order throughout the district. Sinclair interests have lately advised Wilbarger County producers that new connections will be accepted on this storage basis.

The Texas Company is a major purchaser of crude in the districts covered by its part-payment order, and the majority of the connections are with the smaller operators. Jack County and the lower part of Young County were excluded from the district placed on proration.

North Texas producers have previously been prorated on a smaller basis by major companies. The Texas Company plan in south Wichita and Archer County on

CRUDE RUNS TO STILLS, GASOLINE AND GAS AND FUEL OIL STOCKS, WEEK ENDING FEBRUARY 8, 1930

(Figures in barrels of 42 gallons)

District—	Potential Daily Capacity	Potential Capacity Reporting Total	Potential Capacity Reporting Per Cent	Crude Runs to Stills Total	Crude Runs to Stills Daily Average	Crude Runs to Stills Per Cent Operated	Gasoline Stocks	Gas & Fuel Oil Stocks
East Coast	605,700	605,700	100.0	3,181,600	454,500	75.0	7,892,000	6,850,000
Appalachian	128,100	116,600	91.0	623,500	89,100	76.4	1,528,000	686,000
Indiana	360,000	355,000	98.6	1,843,200	263,300	74.2	7,070,000	3,068,000
Oklahoma, Kansas, Missouri	462,200	411,700	89.1	1,850,100	264,300	64.2	4,447,000	2,919,000
Texas	778,000	702,700	90.3	3,693,900	527,700	75.1	7,579,000	12,527,000
Louisiana-Arkansas	270,600	262,000	96.8	1,307,000	186,700	71.3	2,466,000	2,234,000
Rocky Mountain	148,900	139,300	93.6	379,000	54,100	38.8	2,674,000	1,022,000
California	897,400	891,400	99.3	4,129,700	590,000	66.2	15,641,000	109,651,000
Total Week February 8	3,650,900	3,484,400	95.4	17,008,000	2,429,700	69.7	49,297,000	138,957,000
Total Week February 1	3,650,900	3,469,350	95.0	17,339,100	2,477,000	71.4	49,180,000	[1]138,530,000
The Texas and Louisiana Gulf Coastal Figures Shown Below are Included Above in the Totals of Their Respective Districts:								
Texas Gulf Coast	526,500	523,500	99.4	2,870,100	410,000	78.3	6,534,000	9,821,000
Louisiana Gulf Coast	147,500	147,500	100.0	904,300	129,200	87.6	2,093,000	1,407,000

[1]Revised, due to transfer of approximately 2,000,000 barrels to unfinished oils in Louisiana Gulf Coast.

FIELD STATISTICS OF IMPORTANT DISTRICTS

Pool—	Oil Wells Completed	Total Initial Production	Initial Per Well	Number Producing Wells	Daily Production Barrels	Daily Prod. Per Well	Rigs Up	Wells Drilling
WEST TEXAS—								
Hendrick	621	3,117,155	5,028	564	88,830	158[1]	1	1
Church & Fields	214	215,020	1,005	206	22,575	110	..	4
Gulf-McElroy	84	61,905	742	82	13,810	168	1	1
Yates	367	2,502,995	6,820	356	131,055	368[1]	5	13
TEXAS PANHANDLE—								
Gray County	548	396,020	723	522	55,440	106[1]	7	48
OKLAHOMA—								
Oklahoma City[2]	76	739,050	9,724	13	69,763	5,366	17	204
CALIFORNIA—								
Santa Fe Springs[3]	502	1,587,650	3,162	214	165,000	771	11	162

(1) Production partially pinched. [2]Oklahoma City has 98 wells drilled in, but only 76 officially completed, under time proration only 13 of these were permitted to produce.
[3]Includes deep zone production only. For field total add 60 wells and 3,000 bbls.

June 1, 1924, and on July 15, 1924, extended it to all fields. In the meantime Sinclair Crude Oil Purchasing Company established a 50 per cent payment plan on July 1, while on the same date Prairie Oil & Gas Company made it a 60 per cent payment plan, with the producer having the responsibility of storing or shutting in the other 40 per cent. Prairie Oil & Gas Company's certificate plan made its appearance on July 25, 1924. The following September the market situation became somewhat clarified, and The Texas Company discontinued its proration policy. Others followed later, and all agreed to buy in accumulated oil within a specified period with storage charges waived.

California

Acting to stabilize the industry and prevent a long period of depression, conservation leaders are asking the aid of leading bankers and civic organizations in a common effort to reduce California's output to about 600,000 barrels for the remainder of 1930. Going outside the industry to obtain aid is a rather unusual procedure, but it has been pointed out that the general prosperity of Southern California is largely dependent upon the success of the oil business and any assistance given by bankers and civic leaders may help to turn public opinion toward curtailment. Failure of the state to enforce the gas conservation law and the fear that a few operators will hold up the curtailment program have caused leaders in the industry to call for aid from those indirectly connected with the production of oil.

Following the meetings of the general Committee of Fifteen, committees representing the various flush and semi-flush fields met. As a result of this series of meetings, plans were completed for wide-open tests in the majority of areas involved. The tests wer efor the purpose of determining the absolute potentials of these critical fields. This six-day test has been completed in the Elwood field and the potential found to be much higher than anticipated. The Ventura Avenue field is concluding its test, while Santa Fe Springs, Long Beach and Seal Beach are now being tested. After these potentials have been found, the advisory or fact-finding committee will arrive at allowable figures which will bring the state total down to the desired figure. The fields involved, besides those just mentioned, are Maricopa Flats, Round Mountain, Mt. Poso and Kern Front. All will be tested and asked to share in more stringent curtailment measures.

Production during these wide-open tests will run high in California, but the increase should be taken as a favorable indication that more definite results are about to be obtained.

Enforcement of the gas conservation law is being held up by a few small companies that are attempting to prove it unconstitutional. The state is doing its best but has its hands tied with technicalities.

Meanwhile the gasoline market in California remains dull, with bids for cargo shipments running from 5¼ cents to six cents. Refiners are asking a higher figure, the result being a slightly slower movement of spot sales. Shipments on contracts are heavy and total movements through the Panama Canal holding steady. There has been some distress gasoline moving at a figure considerably below the current posted price, this condition being reflected in fewer inquiries at fair prices.

CALIFORNIA OIL RECEIPTS AT ATLANTIC AND GULF COAST PORTS

(Barrels of 42 gallons)

	Total Month January	Total Month December	Week Ended February 8	Week Ended February 1
AT ATLANTIC COAST PORTS—				
Baltimore	573,000	402,000	135,000	[1]92,000
Boston	60,000	.....	.....	.....
New York	1,062,000	[1]1,552,000	299,000	167,000
Philadelphia	692,000	422,000	.....	80,000
Others	295,000	224,000	45,000	54,000
Total	2,682,000	2,600,000	479,000	393,000
Daily Average	86,516	83,871	68,429	59,714
AT GULF COAST PORTS—				
Total	70,000	73,000	.....	25,000
Daily Average	2,258	2,355	.....	3,571
AT ATLANTIC AND GULF COAST PORTS—				
Total	2,752,000	2,673,000	479,000	418,000
Daily Average	88,774	86,226	68,226	59,714
Distribution of Total California Oil Receipts is as Follows:				
Gasoline	2,108,000	[1]2,230,000	379,000	398,000
Kerosene	210,000	50,000	30,000	[1]20,000
Gas Oil	328,000	225,000	.....	.....
Fuel Oil	95,000	168,000	70,000	.....
Lubricants	11,000	.....	.....	.....
Total	2,752,000	2,673,000	479,000	418,000

[1]Revised.

IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

(Barrels of 42 gallons)

	Total Month January	Total Month December	Week Ended February 8	Week Ended February 1
AT ATLANTIC COAST PORTS—				
Baltimore	656,000	923,000	107,000	326,000
Boston	331,000	477,000	90,000	.....
New York	4,172,000	4,146,000	801,000	477,000
Philadelphia	1,199,000	961,000	214,000	218,000
Others	1,358,000	737,000	136,000	345,000
Total	7,716,000	7,244,000	1,348,000	1,366,000
Daily Average	248,903	233,678	192,571	195,143
AT GULF COAST PORTS—				
Galveston District	134,000	172,000	15,000	65,000
New Orleans and Baton Rouge	200,000	511,000	15,000	15,000
Port Arthur and Sabine District	.....	205,000	.....	.....
Tampa	17,000	55,000	.....	.....
Total	351,000	943,000	30,000	80,000
Daily Average	11,323	30,419	4,286	11,428
AT ALL UNITED STATES PORTS—				
Total	8,067,000	8,187,000	1,378,000	1,446,000
Daily Average	260,226	264,097	196,857	206,571

CRUDE OIL PRICE QUOTATIONS

(Revised to February 18, 1930)

CRUDE OIL PRICES CHANGES

Crude prices were made uniform in Oklahoma and Kansas on February 15 when the schedule adopted by Carter Oil Company effective January 16 was adopted by all purchasers. The cut was met by Sinclair Crude Oil Purchasing Company on February 13, followed on February 15 by Prairie Oil & Gas Company. All other buyers adopted the schedule effective that date.

Effective February 15, Ohio Oil Company reduced the market price of Lima, Indiana, Illinois, Princeton and Wooster crudes 15 cents, and Western Kentucky 18 cents per barrel.

Effective February 15, Ohio Oil Company reduced the market price of Elk Basin and Grass Creek crudes 20 cents; Big Muddy crude 10 cents, and Artesia, New Mexico, crude 8 cents per barrel.

Effective February 15, Canadian crude was reduced 15 cents per barrel.

EASTERN STATES

(Effective November 12, 1929)

Penna Grade Oil in New York Transit Lines (New York)	$3.05
Bradford District Oil in National Transit Lines (Pennsylvania)	3.05
Penn Grade Oil in National Transit Lines (Pennsylvania)	3.05
Penn Grade Oil in Southwest Pennsylvania Lines (Penna.)	3.00
Penn Grade Oil in Eureka Pipe Line Lines (West Virginia)	2.90
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.70
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s lines	1.80
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines	1.90
Somerset Oil in Cumberland Pipe Line lines (Kentucky)	1.55
Ragland Grade Oil in Cumberland Pipe Line lines (Kentucky) (Effective Jan. 29, 1929)	60
Keister (Pennsylvania)	1.20

CENTRAL STATES

(Effective February 15. 1930)

Posted by Ohio Oil Co.

Illinois	$1.60
Indiana	1.42
Lima	1.65
Plymouth	1.18
Princeton	1.60
Wooster	1.75

WESTERN KENTUCKY

All grades	$1.50

OKLAHOMA-KANSAS

(Effective February 15, 1930)*

Below 25 gravity	$ .60
25 to 25.9 gravity	.66
26 to 26.9 gravity	.72
27 to 27.9 gravity	.78
28 to 28.9 gravity	.84
29 to 29.9 gravity	.90
30 to 30.9 gravity	.96
31 to 31.9 gravity	1.02
32 to 32.9 gravity	1.08
33 to 33.9 gravity	1.11
34 to 34.9 gravity	1.14
35 to 35.9 gravity	1.17
36 to 36.9 gravity	1.20
37 to 37.9 gravity	1.23
38 to 38.9 gravity	1.26
39 to 39.9 gravity	1.29
40 to 40.9 gravity	1.32
41 to 41.9 gravity	1.35
42 to 42.9 gravity	1.38
43 to 43.9 gravity	1.41
44 and above	1.44

*This schedule was adopted initially by Carter Oil Company on January 16, and became general when Prairie Oil & Gas Company adopted it on February 15.

PANHANDLE

(Effective Jan. 15, 1930)

GRAY COUNTY

Below 29 gravity	$ .69
29 to 29.9 gravity	.75
30 to 30.9 gravity	.81
31 to 31.9 gravity	.87
32 to 32.9 gravity	.93
33 to 33.9 gravity	.96
34 to 34.9 gravity	.99
35 to 35.9 gravity	1.02
36 to 36.9 gravity	1.05
37 to 37.9 gravity	1.08
38 to 38.9 gravity	1.11
39 to 39.9 gravity	1.14
40 to 40.9 gravity	1.17
41 to 41.9 gravity	1.20
42 to 42.9 gravity	1.23
43 to 43.9 gravity	1.26
44 and above	1.29

WHEELER COUNTY

Below 30 gravity	$ .70
30 to 30.9 gravity	.76
31 to 31.9 gravity	.82
32 to 32.9 gravity	.88
33 to 33.9 gravity	.91
34 to 34.9 gravity	.94
35 to 35.9 gravity	.97
36 to 36.9 gravity	1.00
37 to 37.9 gravity	1.03
38 to 38.9 gravity	1.06
39 to 39.9 gravity	1.09
40 to 40.9 gravity	1.12
41 to 41.9 gravity	1.15
42 to 42.9 gravity	1.18
43 to 43.9 gravity	1.21
44 and above	1.24

CARSON-HUTCHINSON COUNTIES

Below 32 gravity	$ .72
32 to 32.9 gravity	.78
33 to 33.9 gravity	.81
34 to 34.9 gravity	.84
35 to 35.9 gravity	.87
36 to 36.9 gravity	.90
37 to 37.9 gravity	.93
38 to 38.9 gravity	.96
39 to 39.9 gravity	.99

CALIFORNIA CRUDE OIL PRICES AT THE WELL

(EFFECTIVE NOVEMBER 8, 1929)

Following are the current prices offered by Standard Oil Company for crude oil at the well: (Price per barrel of 42 gallons in fields indicated)

Gravity	Ventura*	Signal Hill	Alamitos Heights-Seal Beach	Huntington Beach	Inglewood	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Elwood† Terrace	Torrance	Richfield	Whittier La Habra	Montebello	Coyote Hills	Santa Fe Springs	Newhall McKittrick Kern River	Midway-Sunset Elks Hills	Buena Vista Hills	Lost Hills	Coalinga	Wheeler Ridge
14-14.9	$ .85	$ .70	$ .70	$ .70	$ .70	$ .70	$ ..	$ ..	$ .70	$ .70	$ .70	$ .70	$ .70	..	$ .50	$ .50	$ .50	$ .50	$ .50	$ .50
15-15.9	.85	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.50	.50	.50	.50	.50	.50
16-16.9	.85	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.50	.50	.50	.50	.50	.50
17-17.9	.85	.70	.70	.70	.70	.70	..	..	.70	.70	.70	.70	.70	..	.50	.50	.50	.50	.50	.50
18-18.9	.85	.75	.75	.75	.75	.75	..	..	.75	.75	.75	.70	.75	..	.50	.56	.56	.56	.56	.56
19-19.9	.85	.80	.80	.80	.80	.80	..	..	.80	.80	.80	.75	.80	..	.50	.62	.62	.62	.62	.62
20-20.9	.85	.85	.85	.85	.85	.85	..	..	.85	.85	.84	.80	.84	..	..	.68	.68	.68	.68	.68
21-21.9	.86	.89	.89	.89	.89	.89	..	..	.89	.89	.88	.85	.88	.89	..	.74	.74	.74	.74	.74
22-22.9	.87	.93	.93	.93	.93	.93	..	..	.93	.93	.91	.90	.91	.92	..	.80	.80	.80	.80	.80
23-23.9	.90	.97	.97	.97	.97	.97	..	..	.97	.97	..	.95	.94	.95	..	.85	.85	.85	.85	.85
24-24.9	.94	1.01	1.01	1.01	1.01	1.01	1.01	..	1.01	1.01	..	.98	.97	.98	..	.90	.90	.90	.88	.88
25-25.9	.98	1.05	1.05	1.05	1.05	1.05	1.05	..	1.05	1.05	..	1.01	1.00	1.01	..	.95	.95	.95	.91	.91
26-26.9	1.02	1.09	1.09	1.09	1.09	1.09	1.09	..	1.09	1.09	..	1.04	1.04	1.04	..	1.00	1.00	1.00	.94	.94
27-27.9	1.06	1.13	1.13	1.13	1.13	1.13	1.13	..	1.13	1.13	..	1.07	1.08	1.07	..	1.05	1.05	1.05	.98	.97
28-28.9	1.10	1.17	1.17	1.17	1.17	1.17	1.17	..	1.17	1.17	..	1.10	1.12	1.10	..	1.10	1.10	1.10	1.02	..
29-29.9	1.14	1.21	1.21	1.21	..	1.21	1.21	..	..	1.21	..	1.13	1.16	1.15	..	1.16	1.16	1.16	1.06	..
30-30.9	1.18	1.25	1.25	1.25	..	1.25	1.25	..	..	1.25	..	1.16	1.20	1.20	..	1.22	1.22	1.22	1.10	..
31-31.9	1.23	1.30	1.30	1.30	..	..	1.30	..	..	..	..	..	..	1.25	..	1.28	1.28	1.28	1.14	..
32-32.9	1.28	1.35	1.35	1.35	..	..	1.35	..	..	..	..	..	..	1.30	..	1.34	1.34	1.34	1.18	..
33-33.9	..	..	..	..	..	..	1.41	..	..	..	..	..	..	1.35	..	1.40	1.40	1.40	1.22	..
34-34.9	..	..	..	..	..	..	1.47	1.16	..	..	..	..	..	1.40	..	..	..	1.46	1.26	..
35-35.9	..	..	..	..	..	..	1.53	1.22	..	..	..	..	..	1.45	..	..	..	..	1.30	..
36-36.9	..	..	..	..	..	..	1.59	1.28	..	..	..	..	..	1.50	..	..	..	..	..	..
37-37.9	..	..	..	..	..	..	1.65	1.34	..	..	..	..	..	1.55	..	..	..	..	..	..
38-38.9	..	..	..	..	..	..	1.71	1.40	..	..	..	..	..	1.60	..	..	..	..	..	..
39-39.9	..	..	..	..	..	..	1.77	1.46	..	..	..	..	..	1.65	..	..	..	..	..	..
40-40.9	..	..	..	..	..	..	1.83	1.52	..	..	..	..	..	..	..	..	..	..	..	..
41-41.9	..	..	..	..	..	..	1.89	1.58	..	..	..	..	..	..	..	..	..	..	..	..
42-42.9	..	..	..	..	..	..	1.95	1.64	..	..	..	..	..	..	..	..	..	..	..	..

KETTLEMAN HILLS—55 degrees Gravity and above $1.65 per barrel. *Union Oil Company †Changed March 18, 1929.

(See Page 44)

NATIONAL ADVERTISING

makes it easier for you to hold **YOUR REGULAR TRADE**

Everybody likes a LEADER!

And when a product is nationally advertised it has quality and value—it is a leader in its field! The dealer who carries that product is a leader in his community—his trade has greater confidence in him and his merchandise . . . When you sell nationally advertised gasoline and motor oil your good will is increased—your trade is easier to keep—and every new customer means an increase in volume—an increase in turnover—a step forward in progress. The Sinclair Opaline Signs on service stations, made familiar to tourists by advertising, are always friendly invitations to drive in!

SINCLAIR REFINING COMPANY, INC.
45 Nassau Street, New York
Atlanta ↘ Boston ↘ Chicago ↘ Houston ↘ Kansas City

SINCLAIR OPALINE

REG. U.S. PAT. OFF.

is nationally advertised as the **EXTRA SERVICE** *motor oil*

CRUDE OIL PRICE QUOTATIONS (*Continued from Page 42*)

40 to 40.9 gravity..... 1.02
41 to 41.9 gravity..... 1.05
42 to 42.9 gravity..... 1.08
43 to 43.9 gravity..... 1.11
44 and above 1.14

SOMERSET

Below 33 gravity $1.05
33 to 33.9 gravity..... 1.07
34 to 34.9 gravity..... 1.09
35 to 35.9 gravity..... 1.11
36 to 36.9 gravity..... 1.13
37 to 37.9 gravity..... 1.15
38 and above 1.17

WEST TEXAS

(Effective Jan. 15, 1930)

Crane-Upton, Crockett, Howard, Pecos and Winkler Counties and Lea County, N. Mex.

Below 25 gravity .....$ .55
25 to 25.9 gravity..... .58
26 to 26.9 gravity..... .61
27 to 27.9 gravity..... .64
28 to 28.9 gravity..... .67
29 to 29.9 gravity..... .70
30 to 30.9 gravity..... .73
31 to 31.9 gravity..... .76
32 to 32.9 gravity..... .79
33 to 33.9 gravity..... .82
34 to 34.9 gravity..... .85
35 to 35.9 gravity..... .88
36 and above ..... .91

Magnolia posts in Crane, Upton and Winkler Counties. Southern Crude Oil Purchasing Company posts only in Crane, Upton and Winkler Counties.

HOWARD AND GLASSCOCK COUNTY CRUDE

(Effective Jan. 15. 1930)

Below 25 gravity .....$ .55
25 to 25.9 gravity..... .58
26 to 26.9 gravity..... .61
27 to 27.9 gravity..... .64
28 to 28.9 gravity..... .66
29 to 29.9 gravity..... .68
30 to 30.9 gravity..... .70
31 to 31.9 gravity..... .72
32 to 32.9 gravity..... .74
33 to 33.9 gravity..... .76
34 to 34.9 gravity..... .78
35 to 35.9 gravity..... .80
36 and above ..... .82

MARKHAM

The Texas Company

(Effective Jan. 15, 1930)

All grades .....$ .75

CORSICANA HEAVY AND LULING

All grades .....$ .75

SALT FLAT AND DARST CREEK

All grades $1.05

NORTH AND CENTRAL TEXAS

(Effective Jan. 15, 1930)

Ranger, North Texas, Mexia, Powell, Richland, Wortham, Currie, Moran, Nocona and Lytton Springs Crude

(Humble Oil and Refining Company)

Below 25 gravity .....$ .60
25 to 25.29 gravity..... .66
26 to 26.9 gravity..... .72
27 to 27.9 gravity..... .78
28 to 28.9 gravity..... .84
29 to 29.9 gravity..... .90
30 to 30.9 gravity..... .96
31 to 31.9 gravity..... 1.02
32 to 32.9 gravity..... 1.08
33 to 33.9 gravity..... 1.11
34 to 34.9 gravity..... 1.14
35 to 35.9 gravity..... 1.17
36 to 36.9 gravity..... 1.20
37 to 37.9 gravity..... 1.23
38 to 38.9 gravity..... 1.26

CLASSIFICATIONS OF GULF COAST CRUDE

The Texas Company: GRADE A—Beaume gravity not over 26.0 degrees at 60 degrees Fahrenheit; sulphur not over 0.5 per cent; in distilling 500 cc. of the crude that part of the distillate cut between 65 per cent off and 85 per cent off shall have a pour test of zero or lower. GRADE B—All Gulf Coast heavy crudes which do not meet tests for Grade "A" or for Gulf Coast light.

Humble Oil & Refining Company: GRADE A—All crude conforming to the following tests: viscosity not less than 100 seconds Saybolt at 100 degrees Fahrenheit; sulphur not over .4 per cent; Beaume gravity not over 25 at 60 degrees Fahrenheit. Cold tests of distillates having a viscosity of 1000 seconds at 100 degrees Fahrenheit shall not be over 5 degrees Fahrenheit. GRADE B—Embraces all Coastal crude which does not meet the tests for "A" grade crude.

Gulf Pipe Line Company: GRADE A—Beaume gravity not over 24 at 60 degrees Fahrenheit; viscosity not less than 100 seconds universal Saybolt at 100 degrees Fahrenheit; and sulphur not over 0.4 per cent. The yield of 250 viscosity reduced distillate at 100 degrees Fahrenheit not less than 30 per cent, and this 30 per cent not heavier than 20 Beaume, and its pour test not above zero Fahrenheit. The reduced distillate to be secured by reducing the crude with fire and steam until the bottoms have a flash of not less than 540 degrees Fahrenheit, and not more than 560 degrees Fahrenheit open cup, and the entire distillate obtained n this way reduced to a distillate of 250 viscosity. The 10 per cent cut in the original distillate having an average viscosity of 500 seconds at 100 degrees Fahrenheit to have a pour test not higher than 5 degrees Fahrenheit. GRADE B—Embraces crude which does not meet test for "A" grade.

Sun Pipe Line Company: GRADE A—Viscosity not less than 100 seconds at 100 degrees Fahrenheit Saybolt. Sulphur not over .4 per cent. Beaume gravity not over 25 at 60 degrees Fahrenheit. Cold Test: of distillates having viscosity of 1000 seconds at 100 degrees Fahrenheit shall not be over 5 degrees Fahrenheit A. S. T. M. Method. GRADE B—All Coastal crudes which do not meet specifications for Grade A crude.

---

39 to 39.9 gravity..... 1.29
40 to 40.9 gravity..... 1.32
41 to 41.9 gravity..... 1.35
42 to 42.9 gravity..... 1.38
43 to 43.9 gravity..... 1.41
44 and above 1.44

SOUTH TEXAS

Mirando .....$ .75

GULF COAST

(Effective May 21, 1929)

Grade "A" all companies..... 1.05

Grade "B"

Below 25 gravity.....$ .90
25 to 25.9 gravity..... .93
26 to 26.9 gravity..... .96
27 to 27.9 gravity..... .99
28 to 28.9 gravity..... 1.02
29 to 29.9 gravity..... 1.05
30 to 30.9 gravity..... 1.08
31 to 31.9 gravity..... 1.11
32 to 32.9 gravity..... 1.14
33 to 33.9 gravity..... 1.17
34 to 34.9 gravity..... 1.20
35 and above 1.23

WYOMING-MONTANA

(Effective February 15, 1930)

Wyoming

Byron $1.33
Ferris 1.60
Elk Basin 1.45
Grass Creek 1.45
Rock Creek 1.25
Lost Soldier 1.05
Lance Creek 1.53
Mule Creek 1.20
Notches ..... .65
Big Muddy 1.33
Osage 1.65
Hamilton Dome ..... .85
Pilot Butte 1.75
Torchlight-Greybull 1.65
Lander ..... .80
Rex Lake 1.10
South Casper Creek-Poison Spider..... 1.00

SALT CREEK

Midwest Refining Company

29 to 29.9 gravity.....$ .90
30 to 30.9 gravity..... .96
31 to 31.9 gravity..... 1.02
32 to 32.9 gravity..... 1.08
33 to 33.9 gravity..... 1.11
34 to 34.9 gravity..... 1.14
35 to 35.9 gravity..... 1.17
36 to 36.9 gravity..... 1.20
37 and above 1.23

MONTANA

(Effective February 15, 1930)

Sunburst 1.65
Cat Creek 1.48
Lake Basin 2.20

NEW MEXICO

Artesia 1.00
Hog Back 1.43

CANADA

(Effective February 15, 1930)

Oil Springs 2.12
Petrolia 2.05

LOUISIANA-ARKANSAS

(Effective Jan. 16, 1930)

Homer, Haynesville, Caddo, El Dorado, De Soto and Crichton and Cotton Valley*

(Atlantic Oil Producing Company, Standard of Louisiana, Magnolia Petroleum Company and The Texas Company.)

27 to 27.9 gravity.....$ .78
28 to 28.9 gravity..... .84
29 to 29.9 gravity..... .90
30 to 30.9 gravity..... .96
31 to 31.9 gravity..... 1.02
32 to 32.9 gravity..... 1.08
33 to 33.9 gravity..... 1.11
34 to 34.9 gravity..... 1.14
35 to 35.9 gravity..... 1.17
36 to 36.9 gravity..... 1.20
37 to 37.9 gravity..... 1.23
38 to 38.9 gravity..... 1.26
39 to 39.9 gravity..... 1.29
40 to 40.9 gravity..... 1.32
41 to 41.9 gravity..... 1.35
42 to 42.9 gravity..... 1.38
43 to 43.9 gravity..... 1.41
44 gravity and above..... 1.44

*Shreveport-Eldorado's postings stop at above 40 gravity.

The posting on Cotton Valley is same as Caddo. From 36 to 52 and above the regular gravity schedule is followed.

The Texas Company pays North Texas gravity scale in North Louisiana.

STEPHENS

(All Companies)

Below 28 gravity .....$ .70
28 to 28.9 gravity..... .75
29 to 29.9 gravity..... .80
30 to 30.9 gravity..... .85
31 to 31.9 gravity..... .90
32 gravity and above..... .95

SMACKOVER

(All Companies)

Below 24 gravity .....$ .85
24 and above 1.00
Bellevue 1.05
Jennings 1.15
Vinton 1.30
Edgerly 1.30
Starks Dome 1.30
Urania ..... .85
Calion ..... .75

Fred Dallas does a good reaming job

Here's a Real Reaming Crew

Over in Cameron Parish, Louisiana, last month, Fred Dallas reamed down 1406 feet of hole with a 23½-inch Reed Three Point Reamer and set 18⅝-inch casing on bottom without a single hitch. Reed Reamers will save both time and money for you.

REED ROLLER BIT CO.

HOUSTON, TEXAS

150 Broadway, New York City, N. Y.

1317 Esperanza St., Los Angeles, Calif.

Gulf Coast and Mid-Continent Distributors

Martin-Decker and Calmec Products

United States Daily Average Production

Figures below are taken from the complete revised estimates of the AMERICAN PETROLEUM INSTITUTE except for the current week, which are advance estimates issued by the A. P. I. and are subject to revision:

1929	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Daily Av.	United States Total
January	722,550	97,150	632,500	136,750	36,650	78,600	111,950	73,200	747,250	2,635,600	81,703,600
February	714,800	95,950	643,350	142,300	35,700	74,600	108,550	71,750	797,800	2,684,800	75,204,400
March	666,500	95,500	662,500	147,750	35,800	74,250	108,850	70,400	786,000	2,647,400	82,068,350
April	665,600	106,400	650,100	154,550	35,550	72,900	110,850	69,400	781,350	2,646,700	79,402,100
May	679,650	115,400	651,100	150,350	35,350	71,500	114,150	72,850	749,250	2,639,600	81,827,600
June	685,200	120,750	688,200	147,500	35,700	70,050	116,750	72,000	827,200	2,763,400	82,902,250
July	722,050	124,250	718,950	148,150	35,750	68,650	122,000	74,250	874,850	2,888,900	89,555,250
August	728,100	127,950	750,750	153,100	36,300	66,900	126,600	77,900	873,300	2,940,900	91,167,250
September	714,050	128,450	741,200	156,600	37,050	65,300	137,250	78,600	874,850	2,933,350	88,000,650
October	673,600	113,400	714,550	167,050	39,700	64,550	137,400	77,950	876,600	2,864,800	88,809,500
November	640,300	110,050	702,350	171,350	36,750	63,700	135,400	76,550	706,500	2,642,800	79,285,050
December	650,000	111,600	687,850	161,350	38,700	61,850	140,650	76,150	698,200	2,626,350	81,417,000
1930											
January	671,050	111,700	672,650	178,300	37,650	58,500	142,250	73,850	688,850	2,634,800	81,574,650
February 1	612,000	110,400	655,900	195,050	36,500	57,250	138,650	78,650	710,600	2,595,000	18,165,000
February 8	631,650	110,450	656,700	199,500	37,600	58,700	137,000	74,300	707,900	2,613,800	18,296,600
February 15	632,700	110,500	652,750	200,100	37,550	58,400	135,100	74,850	751,000	2,652,950	18,570,650
Increase	1,050	50	.....	600	.....	.....	.....	550	43,100	39,150	274,050
Decrease	.....	.....	3,950	.....	50	300	1,900	.....	.....	.....	.....

TEXAS

(Outside Gulf Coast)

PANHANDLE DISTRICT

	Feb. 15	Feb. 8
Carson County	9,600	9,400
Gray County	54,800	56,300
Hutchinson County	24,150	24,800
Wheeler County	550	800
Others	600	500
Total	89,700	91,800

NORTH TEXAS

Archer County	17,550	17,800
Burkburnett	8,200	8,200
Electra	11,500	11,500
Iowa Park-KMA	5,150	5,200
Montague and Cooke	11,200	11,550
Wilbarger	25,700	26,100
Others	1,600	1,500
Total	80,900	81,850

WEST CENTRAL TEXAS

Brown County	8,800	8,900
Calahan County	3,300	3,600
Coleman County	5,550	5,600
Eastland-Desdemona	6,000	6,050
Jack County	4,600	4,600
Palo Pinto County	650	600
Shackelford County	9,200	9,000
Stephens County	5,400	5,300
Throckmorton County	750	700
Young County	8,200	8,100
Others	1,400	1,400
Total	53,850	53,850

WEST TEXAS

Crane-Upton Counties	45,500	45,850
Crockett County	2,100	2,050
Howard County	37,800	38,350
Jones County	2,200	2,300
Mitchell-Scurry	2,300	2,450
Yates	129,500	130,650
Pecos County	6,800	7,200
Reagan County	16,900	17,050
Winkler County	89,500	88,600
Others	3,800	3,800
Total	336,400	338,300

EAST CENTRAL TEXAS

Boggy Creek	3,400	3,700
Corsicana-Powell	5,800	5,850
Currie	400	400
Mexia	4,750	4,700
Nigger Creek	250	250
Richland	250	250
Wortham	900	900
Van	8,000	6,800
Total	23,750	22,850

SOUTHWEST TEXAS

Dale	300	300
Darst Creek	17,450	15,500
Laredo District	8,750	8,700
Luling	10,400	10,500
Lytton Springs	900	900
Somerset	1,550	1,500
Salt Flat	25,950	27,900
Others	2,850	2,750
Total	68,150	68,050
T'tl Tex. (outside Gulf Coast)	652,750	656,700

TEXAS GULF COAST

Barbers Hill	24,200	25,650
Batson	1,100	1,100
Big Creek	4,000	4,500
Blue Ridge	1,800	1,950
Boling	1,050	1,000
Damon Mound	450	500
Goose Creek	4,900	4,800
Hull	8,550	9,100
Humble	15,200	16,400
Orange	2,500	2,600
Pierce Junction	10,700	11,100
Raccoon Bend	12,050	12,050
Refugio	37,400	30,400
Saratoga	1,000	1,000
Sour Lake	2,400	2,450
South Liberty	5,950	6,450
Spindle Top	17,800	19,100
Sugar Land	12,100	12,100
West Columbia	6,200	6,000
Washington Co.	1,650	1,650
Fannett	1,300	1,400
Port Neches	1,700	1,600
North Dayton	1,150	1,200
Others	3,700	4,300
Total	178,850	178,400
Texas Total	831,600	835,100

OKLAHOMA

Asher	2,500	2,200
Carr City	9,050	7,950
Logan County	11,200	13,100
Braman	3,600	3,600
Blackwell	3,450	3,400
Hubbard	1,700	1,650
Thomas	550	550
Tonkawa	8,500	8,500
Garber	4,650	4,550
Burbank	16,100	16,500
Osage (outside Burbank)	26,450	26,400
Cushing	14,200	14,250
Yale Jennings	8,750	8,650
Davenport	1,250	1,250
Bristow Slick	17,400	17,500
North Okmulgee	11,300	11,300
Lyons Deaner	6,300	6,300
Cromwell	7,300	7,300
Papoose	2,850	2,900
Wewoka	4,100	4,150
Seminole	22,200	22,150
East Seminole	4,300	3,700
Bowlegs	22,850	21,050
Searight	8,200	7,400
Little River	47,150	44,850
East Little River	17,000	20,550
Earlsboro	32,200	30,050
East Earlsboro	31,650	53,250
Duncan District	8,450	8,450
Graham	3,700	3,700
Fox	1,250	1,300
Healdton	12,000	12,250
Hewitt	7,400	7,400
Scholem Alechem	13,750	14,000
Pearson	700	800
St. Louis	42,750	41,300
Allen	23,400	23,450
Maud	5,650	6,000
Mission	15,200	12,800
Oklahoma City	86,750	69,650
Sasakwa	9,550	10,350
Others	55,400	55,200
Total	632,700	631,650

CALIFORNIA

Santa Fe Springs	170,000	162,500
Long Beach	111,000	109,000
Huntington Beach	41,000	41,000
Dominguez	10,500	10,500
Inglewood	22,000	22,500
Midway-Sunset	78,500	75,000
Ventura Avenue	52,000	51,100
Seal Beach	31,500	29,500
Elwood-Goleta	59,500	33,800
Kettleman Hills	13,500	14,000
Others	161,500	159,000
Total	751,000	707,900

KANSAS

Greenwood County	20,500	20,600
Florence-Covert	900	900
Peabody-Ebling	3,050	3,050
Eldorado-Towanda	13,150	13,150
Augusta-Fox Bush	2,900	2,900
Rainbow Bend	1,100	1,100
Russell	3,300	3,400
Churchill	4,750	4,250
Oxford	3,000	3,150
Sedgwick	23,450	23,450
Others	34,400	34,500
Total	110,500	110,450

NORTH LOUISIANA

	Feb. 15	Feb. 8
Homer	3,600	3,600
Haynesville	4,600	4,600
Caddo Light	10,000	9,550
Caddo Heavy	2,800	2,950
DeSoto-Red River	2,300	2,350
Elm Grove	450	450
Bellevue	600	600
Cotton Valley	2,100	2,100
Urania	5,150	5,150
Pleasant Hill	900	900
Zwolle	3,650	4,000
Others	1,400	1,350
Total North Louisiana	37,550	37,600

LOUISIANA GULF COAST

Port Barre	2,000	....
Bayou Boullion	50	50
East Hackberry	1,450	1,400
Hackberry	1,800	1,700
Edgerly	600	600
Evangeline	1,100	1,200
Lockport	3,000	2,950
Sorrento	100	100
Sulphur Dome	5,300	5,300
Vinton	4,250	3,900
Others	1,600	3,900
Total Louisiana Gulf Coast	21,250	21,100
Louisiana Total	58,800	58,700

ARKANSAS

El Dorado	4,100	4,050
Champagnolle	4,400	4,950
Smackover Light	5,200	5,200
Smackover Heavy	41,300	41,100
Stephens	1,000	1,000
Nevada	1,100	1,100
Lisbon	1,050	1,050
Others	250	250
Total	58,400	58,700

MOUNTAIN STATES

WYOMING

Salt Creek	30,950	29,200
Grass Creek	1,950	2,000
Elk Basin	700	750
Big Muddy	2,100	2,000
Lost Soldier	2,850	3,300
Rock River	2,300	2,400
Lance Creek	150	200
Oregon Basin	4,250	3,850
La Barge	2,150	2,350
Others	2,700	3,600
Total	50,100	49,650

MONTANA

Cat Creek	1,200	1,200
Sunburst	5,950	5,950
Pondera	2,000	2,100
Others	50	50
Total	9,200	9,300

COLORADO

Moffats (Craig)	1,050	1,100
Fort Collins	1,600	1,800
Florence	1,000	500
Others	1,600	1,650
Total	5,250	5,050

NEW MEXICO

Table Mesa	100	100
Artesia	750	750
Hogback	400	400
Rattlesnake	1,400	1,100
Bal. Lea & Eddy Cos.	6,700	7,000
Others	950	950
Total	10,300	10,300
Total Mountain States	74,850	74,300

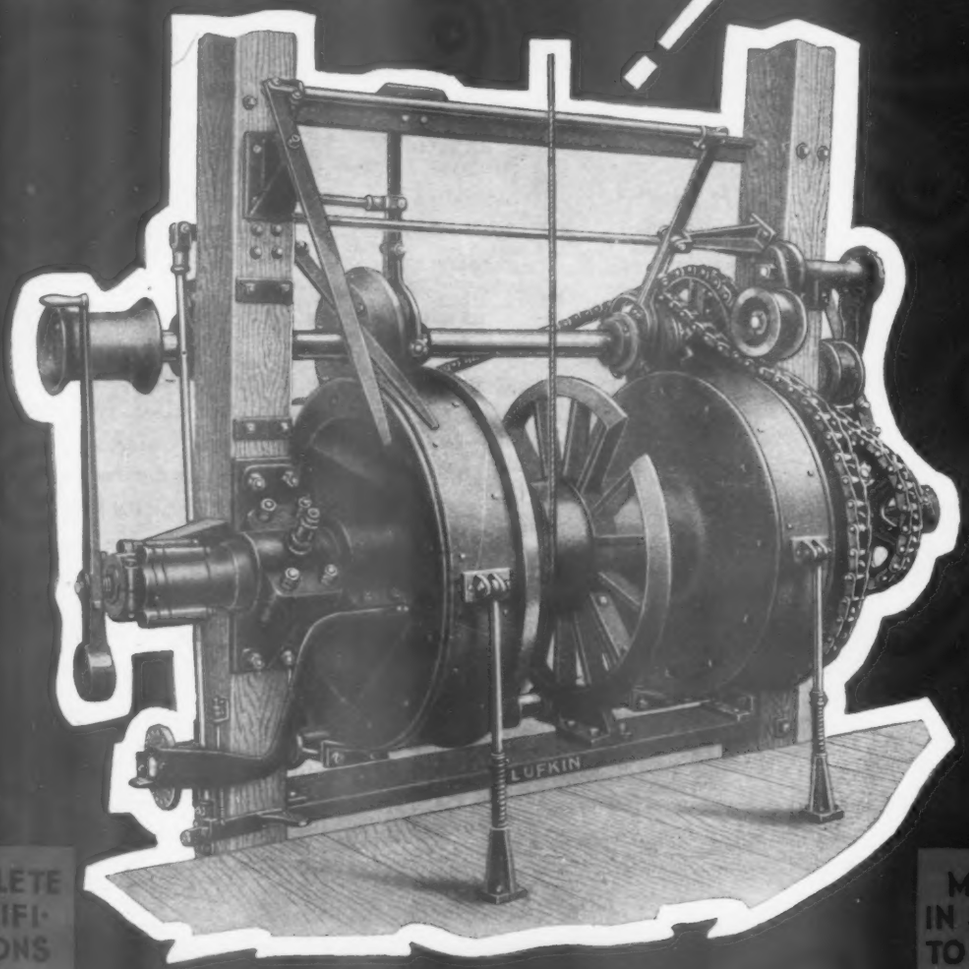
EASTERN STATES

(Including Ill., Ind., Ohio, W. Va., Pa., Ky., & N. Y.)	121,700	137,000
Michigan	13,400	....
Total Eastern States	135,100	137,000

PRODUCTION SUMMARY

East of Rockies	1,827,100	1,831,600
Total U. S.	2,652,950	2,613,800

Hoists That Perform



COMPLETE SPECIFICATIONS UPON REQUEST

MADE IN SIZES TO SUIT ANY WELL CONDITION

Lufkin No. 52 Hoist

Manufactured at Lufkin, Texas, by

THE LUFKIN FOUNDRY AND MACHINE CO.

THE LUFKIN LINE

District Offices

Tulsa, Okla. Houston, Texas

THE LUFKIN LINE

Los Angeles, Cal. Seminole, Okla. El Dorado, Ark. Odessa, Texas New York, N. Y.

McCORMICK-DEERING INDUSTRIAL TRACTOR

The POWER Behind a Wide Variety of Successful Winches, Pipe Handling Booms, Back Fillers, Crawlers, Welders, Spudders, Drillers, Ditchers, Graders, Etc.

[PRODUCT OF INTERNATIONAL HARVESTER]

FLEXIBILITY to combine with a great variety of oil field equipment has made the McCormick-Deering Industrial Tractor the ideal power plant for the operation of winches, booms, drillers, welding outfits, ditchers, etc. It provides abundant power at low cost.

Behind every McCormick-Deering Industrial Tractor and Power Unit stands a service policy of lasting cash value to every owner. Company-owned branches are now maintained at 180 points in the United States and Canada, supplemented by special Industrial Tractor distributors and thousands of McCormick-Deering Tractor dealers the country over.

Those interested in reducing costs in well maintenance work, pipe laying, water well drilling, private road maintenance, etc., are invited to write for the McCormick-Deering Industrial Tractor and Equipment Catalog or get in touch with the nearby distributor, who is in position to demonstrate the power and the special equipment.

The International Harvester Line also includes International Motor Trucks ranging from 3/4-ton to 5 tons.

McCormick-Deering Industrial Tractors—and Special Equipment—Are Sold in the Oil Country by:

J. D. Adams & Co.,
217 Belmont Ave., INDIANAPOLIS, Ind.

Browning-Ferris Machinery Co.,
205 Exposition Ave., DALLAS, Texas.
1412 Ennis St., HOUSTON, Texas

Cuyahoga Equipment Co.,
5713 Euclid Ave., CLEVELAND, Ohio

Z. T. Darrow & Son,
CANANDAIGUA, New York

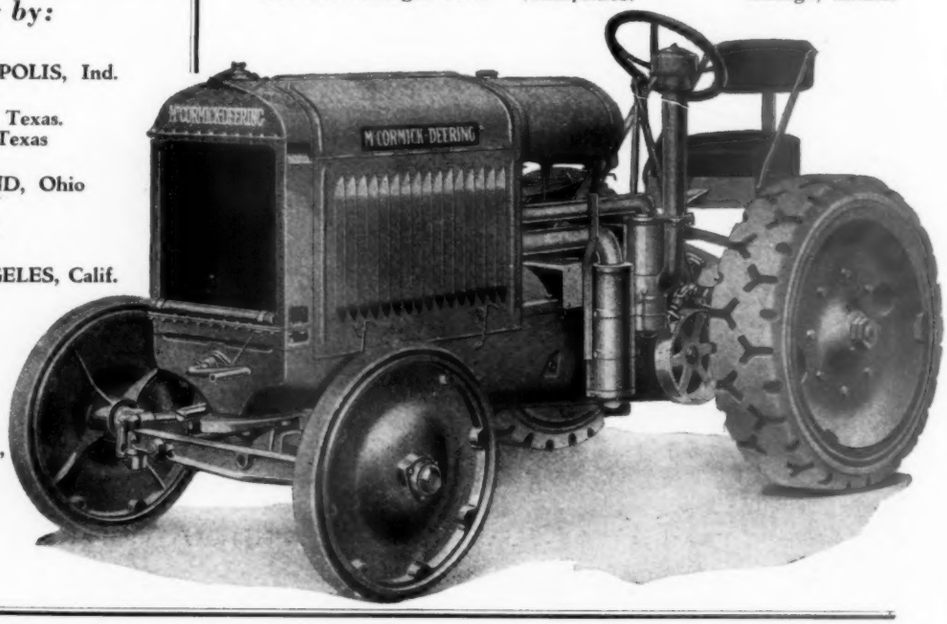
B. Hayman Co., Inc.,
118 Los Angeles St., LOS ANGELES, Calif.

Industrial Machinery Company,
1621 Locust St.,
KANSAS CITY, Mo.

H. W. Moore Equipment Co.,
Sixth and Acoma,
DENVER, Colo.

Option Equipment & Supply Co.,
Mt. Oliver Station,
PITTSBURGH, Pa.

Resistcor Engineering Corp.,
302 Okla. Nat'l Bldg.,
TULSA, Okla.



INTERNATIONAL HARVESTER COMPANY
of America
606 So. Michigan Ave. *(Incorporated)* Chicago, Illinois

PERSONAL MENTION-MEN YOU KNOW

C. A. Yoakum, chief geologist for the Sinclair Oil & Gas Company, Tulsa, has resigned to become vice-president of Tri-State Royalty Company and Royalty Corporation of America.

T. M. Kerr, field sales manager in Oklahoma and Louisiana for Lucey Products Corporation, is in California where he will make a survey of California drilling operations.

Ralph A. Johnson has resigned as land man in Oklahoma for the Sinclair Oil & Gas Company, and has set up business for himself at 407 Exchange National Bank Building, Tulsa.

F. E. Bernsen, vice-president of Lucey Products Corporation and Hugh B. Hodges, sales engineer, have gone to Chattanooga to attend the annual stockholders meeting of the Lucey Manufacturing Corporation.

Harry H. Power, engineer for Gypsy Oil Company, Tulsa, and new Mid-Continent chairman of the American Institute of Mining and Metallurgical Engineers, is in New York attending the A. I. M. E. meeting.

W. A. W. Krebs, petroleum engineer and tax expert of Tulsa, spoke on "Taxation" at the regular class of the oil and gas lecture course at the Tulsa High school.

T. C. Haller has been promoted to purchasing agent for the Twin State Oil Company, Tulsa, succeeding E. A. Cook, resigned. George W. Eads will be assistant to Mr. Haller.

Bradford Hearn, secretary-treasurer of the Sparco Gasoline Company, Inc., and assistant sales manager of the Shreveport-El Dorado Pipe Line Company, with headquarters in Shreveport, Louisiana, resigned effective February 15 to take a position with the land department of the Shell Petroleum Corporation at Dallas, Texas.

L. C. Decius has been appointed manager of the land department of Associated Oil Company, in charge of all land and geological activities, according to a recent announcement by J. H. Jenkins, general manager of the producing division. Decius is a graduate of Standford University and is well known in geological circles. Prior to his most recent appointment, he was chief geologist for the company.

O. D. Strong has been appointed district sales manager for Reading Steel Casting Company in the Tulsa district, comprising Oklahoma and Kansas, with headquarters at 214½ East Brady Street, Tulsa.

A. W. Peake has resigned as president of Dixie Oil Company to take charge of production for the Standard Oil Company (Indiana). The change is in effect a promotion, since Dixie Oil Company is the producing unit of Standard Oil Company (Indiana) in the Mid-continent. He will have his headquarters in Chicago.

The change in Dixie Oil Company's organization brings F. O. Prior, who has been vice-president in charge of operations, to the post as president. H. G. Schneider, who has been in charge of the geological and land departments, has been made vice-president of Dixie Oil Company.

Headquarters of the Dixie Oil Company were moved to Tulsa from Shreveport early this year.

Mr. Peake has been with subsidiaries of Standard Oil Company (Indiana) since 1916, when he joined Midwest Refining Company at Casper as field superintendent. He became general manager in 1922 and in 1925 was made a director. He was transferred to Dixie Oil Company in 1928 as president with headquarters at Shreveport. He is a graduate of Leland Stanford University and worked for the Ventura Oil Company from his graduation 1912 until 1916.

Mr. Prior came to the Dixie Oil Company in 1928 from Casper.

Max Fuhrman, president and principal stockholder in the Fuhrman Petroleum Company of Oklahoma, which sold its production and leases to Transcontinental Oil Company, does not plan to retire from business. The sale did not include all of the lease holdings.

Dan Freel, 45, independent operator and former vice-president of Humble Pipe Line Company, died February 12 at his home in San Angelo, Texas, after an attack of heart disease. Mr. Freel enjoyed a wide acquaintance among oil men in the Rocky Mountain and Mid-Continent districts. He is survived by a widow and one son, Dan Freel, Jr. The body was shipped to Denver for burial.

John R. Loggie, 54, independent operator and former superintendent of production for the Texhoma Oil & Refining Company before the merger of the latter with Continental Oil Company died in Wichita Falls, February 14.

Horace Butler, 37, general manager of Arab Gasoline Corporation, Eastland, Texas, was instantly killed, and his brother Samuel Butler, president of the above concern, was slightly injured when their car figured in a collision February 13 near Mineral Wells, Texas, while trying to avoid striking a child on the highway. Burial of Horace Butler was held at his former home in Westchester, Pennsylvania.

Charles Pierson Brant of Indianapolis, a pioneer in the development of oil in this country, died at his home, 3331 North Meridian Street, January 30 as a result of a heart attack. Aside from his active work in his oil interests at the time of his death he was president of Indiana Oxygen Company, Indianapolis. Mr. Brant was born September 18, 1854, in Butler County, Pennsylvania. He married Luella Rittz of St. Petersburg, Pennsylvania, February 10, 1886, who still survies him, with two sons, John R. and Walter L. Brant, both of Indianapolis.

E. F. Decker, Martin Decker Corporation of Long Beach, California, departed February 11 for the Mid-Continent, making stops at Tulsa and points in Texas. He plans to be back in California in time for the Los Angeles Petroleum Exposition, which opens March 16.

Pliny Phillip Stagg, aged 45, district purchasing agent and warehouse man for Gulf Refining Company of Louisiana, with headquarters at Shreveport, died at his home in Shreveport, February 13, after a month's illness. He had been connected with the company 10 years. Interment was in Shreveport.

R. W. Phelps, a petroleum engineer, has tendered his resignation to the Union Oil Company of California to take effect the end of February in order that he may go into private practice. Phelps received his engineering training at the University of California. In 1911 he was in the employ of a subsidiary of the Associated Oil Company as a geologist. His work while with Associated Oil Company covered Ventura, Los Angeles, and Orange Counties. In 1918 he joined Union Oil Company of California. The greater part of the time he was with this company he had charge of petroleum engineering in Orange County with headquarters at Brea. His work consisted of geological examinations as far south as San Quintin, Lower California, and appraising of properties submitted to the company. He is co-author of the well-known hand-book "Petroleum Engineering" (Phelps and Lake) which has had a large and world-wide distribution. He is also author of technical papers dealing with petroleum development and production among which is a paper on spacing of oil and gas wells for greatest economic return. His office will be at Brea, Orange County, for the present.

E. A. Cook, purchasing agent for Twin State Oil Company, Tulsa, has resigned to accept a similar position with Independent Oil & Gas Company.

A. I. M E. Reviews Progress of Unit Operation Plan

(Continued from page 35)

companies in that it will also give them dependable crude supplies. It is desirable to the large company as it is to the small company, but not nearly so necessary.

Neither will unit operation mean the passing of the small producer. An interest in a small unit that an individual operates for himself and a few partners gives to the small producer an opportunity to survive that he cannot possibly have if he attempts to compete under the old wasteful competitive type of development to which he is accustomed. His survival is dependent upon adjusting himself to new conditions.

General adoption of unit operation would give to each party the following advantages:

Consumer—greater assurance of permanent and stabilized supply. Receipt of products over a period of years at lower average price. Greater assurance of freedom from monopolistic control.

Producer—less capital investment required. Lower development cost. Lower operating cost. Increased oil yield. Stabilized business.

These and many additional advantages were cited and also included benefits to the royalty owner and the general public welfare.

In each of the summaries presented unit development activities were reviewed for the respective areas covered. These papers showed without exception that vast sums of money can be saved where pools are operated in a unitized manner.

Other symposiums at which complete reviews of world production by countries and districts and engineering problems are to be considered are on the program for the later sessions of meeting.

Attendance at the annual meeting here today was largely confined to engineers in the Eastern territory and those members of active committees reporting at this session. However, the lack of numbers did not minimize the importance of the technical subjects presented in the form of prepared papers and round table discussion.

Unit Development Plan For Nine Section Block

Dallas, Texas.—A unit plan of exploration and development of a nine section wildcat drilling block in Terry County, located in West Texas, is being launched by four companies. Penn Oil Company, Dallas, has been designated as the unit operator, and also has the contract to drill a 5000-foot test, using a heavy rotary outfit that was formerly engaged in the drilling of a wildcat in Lea County, New Mexico. Two major companies — Atlantic Oil Producing Company and Midwest Exploration Company—are participating in the project, while A. L. Ballard, San Antonio, is the fourth member.

Davis Heads A. P. I. Committee On Unit Operation

NEW YORK.—Appointment of a Central Committee on Unit Operation to guide the work of the American Petroleum Institute along the line of unit development of oil pools was announced February 11 at a joint meeting of the general committee of the Institute's Divisions of Production, Refining and Marketing. W. N. Davis of the Phillips Petroleum Company, Bartlesville, Oklahoma, is chairman of the committee, appointed by President E. B. Reeser under the provisions of a resolution endorsing the policy of unitization adopted by the board December 3, 1929, at the annual meeting in Chicago. The committee is assigned as a standing committee of the Institute's Division of Production.

Formal work of the newly organized divisions of the Institute was begun at separate meetings of the general committees at the close of Tuesday's joint session. The divisions, organized under a uniform plan, will enable members of the Institute engaged in the different branches of the petroleum industry to work in closer cooperation on problems directly affecting their interests and at the same time will relieve the Institute's directors of much of the detail which it is believed better can be handled by the smaller groups.

Existing committees of the Institute are retained, but are allocated to pertinent divisions. Provision is made for the appointment of additional committees as well as the creation of groups of members as need arises in states where there is no existing organization. Especially in connection with the work of promulgating general adoption of the National Code of Practices for Marketing Refined Petroleum Products state sections may be formed.

Executives of oil companies attending the joint meeting were urged to encourage their employes to work with the Institute on the various problems affecting the industry in field, refinery and market. The opinion was expressed that the growing cooperation now noticeable within the industry was due almost 100 per cent to the Institute and that the broadened scope of activities provided by the new plan of divisional organization gives the Institute far greater facilities for carrying on activities, new or already assigned, without duplication of effort.

In addition to Chairman Davis, members of the new Central Committee on Unit Operations are:

T. H. Barton, Lion Oil Refining Company, Eldorado, Arkansas;

Amos L. Beaty, Transcontinental Oil Company, New York;

E. R. Brown, Magnolia Petroleum Company, Dallas;

J. A. Browne, General Petroleum Corporation, Los Angeles;

Axtell J. Byles, Tide Water Associated Oil Company, New York;

Frank R. Coates, Henry L. Doherty & Company, New York;

J. S. Cosden, Cosden Oil Company, Fort Worth;

Craig F. Cullinan, American Republics Corporation, New York;

Henry M. Dawes, Pure Oil Company, Chicago;

T. A. Dines, Midwest Refining Company, Casper;

O. D. Donnell, Ohio Oil Company, Findlay;

W. S. Farish, Humble Oil & Refining Company, Houston ;

W. S. Fitzpatrick, Prairie Oil & Gas Company, Independence;

H. V. Foster, Indian Territory Illuminating Oil Company, Bartlesville;

Jacob France, Mid-Continent Petroleum Company, Tulsa;

Wirt Franklin, Wirt Franklin Petroleum Company, Ardmore;

C. M. Fuller, Richfield Oil Company, Los Angeles;

John L. Gray, Shaffer Oil & Refining Company, Tulsa;

M. J. Grogan, Louisiana Oil & Refining Company, Shreveport;

R. C. Holmes, The Texas Company, New York;

W. M. Irish, Atlantic Refining Company, Philadelphia;

K. R. Kingsbury, Standard Oil Company of California, San Francisco;

R. F. MacArthur, Barnsdall Oil Company, Tulsa;

R. S. MacMillan, California Oil & Gas Association, Los Angeles;

Edgar J. Marston, Texas Pacific Coal & Oil Company, Fort Worth;

W. C. McDuffie, Pacific Western Oil Company, Los Angeles;

E. T. Moore, Simms Petroleum Company, Dallas;

D. J. Moran, Continental Oil Company, Ponca City;

J. Edgar Pew, Sun Oil Company, Philadelphia;

Waite Phillips, Independent Oil & Gas Company, Tulsa;

E. G. Seubert, Standard Oil Company (Indiana), Chicago;

L. P. St. Clair, Independent Oil Producers Agency, Los Angeles;

W. M. Skelly, Skelly Oil Company, Tulsa;

Thos. B. Slick, Tom Slick Oil Company, Oklahoma City;

W. C. Teagle, Standard Oil Company (New Jersey), New York;

J. C. Van Eck, Shell Union Oil Company, New York;

L. H. Wentz, Wentz Oil Corporation, Ponca City;

Geo. P. Whaley, Vacuum Oil Company, New York.

As Protection to You, We Mark It Blue

AND NOW

available in all the usual oil-country sizes and weights, ¼ to 16 inch.

REG.U.S.PAT.OFF.

TONCAN

COPPER
MO·LYB·DEN·UM

IRON PIPE

A FERROUS pipe of far more than ordinary character—made from a true alloy of highly refined iron, copper and molybdenum.

A pipe that has proved its unusual corrosion and rust resisting qualities in actual service under the most adverse conditions.

A pipe that has shown a remarkable life in service made difficult by the presence of salt and sulphur solutions.

A pipe that can mean fewer shut downs and lower production costs on your wells.

Let us tell you the names of some of the prominent users of Toncan Iron Casing, Tubing, and Line Pipe,—their experience and comments.

Write for a copy of "Pipe for Permanence."

REPUBLIC IRON & STEEL COMPANY
YOUNGSTOWN, OHIO

Birmingham Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit
El Paso Los Angeles New York Philadelphia Pittsburgh San Francisco Seattle St. Louis

Sale of Venezuelan Oil Properties Not Made

London, January 31. — (By mail).— Major Sir Richard Barnett, president of British Controlled Oilfields, Ltd., a Canadian company whose headquarters are at London, stated to a representative of *The* OIL WEEKLY today that negotiations which have been conducted with George Naphen and others of New York for the acquisition by American interests of certain of his company's Venezuelan assets have proved abortive and have definitely been brought to a close. Sir Richard explained that British Controlled Oilfields, Ltd., producing properties at El Mene, Venezuela, and Palo Seco, Trinidad, were not involved in the deal, which was proposed to include a portion of the royalty accruing to the British company from the operations of Creole Petroleum Corporation on the Eastern Area of the Buchivacoa Concession, together with all of its stock interest in the Central Area Exploitation Company (Venezuela), Ltd.

The operations of the Creole Petroleum Corporation, which is a subsidiary of the Standard Oil Company of New Jersey, resulted in the successful completion at Las Palmas or Dabajuro during 1929 of two wells of undisputed commercial importance, from which a 12½ per cent overriding royalty is payable to British Controlled Oilfields, Ltd. The Central Area Exploitation Company, headed by Sir A. P. du Cros, as chairman, was organized January 22, 1926, to acquire the Central Area, embracing 640 acres of the Buchivacoa Concession, formerly owned by British Controlled Oilfields, Ltd. Its capital consists of 625,000 £1 shares, of which 500,000 were issued to the Anglo-Venezuela Trust, Ltd., in exchange for certain sums contributed to its treasury, the remaining 125,000 shares having been issued to British Controlled Oilfields, Ltd., in exchange for the land. The Central Area company, whose operations are managed by Creole Petroleum Corporation, owns five small producing wells situated at Hombre Pintado, a new field which has been described in *The* OIL WEEKLY from time to time. Drilling operations have been suspended during the period of negotiation, but it is expected that exploratory work will be resumed shortly.

Iraq Directors Defer Pipe Line Decision

London (By Mail)—Directors of the Iraq Petroleum Company (formerly Turkish Petroleum Company) met here January 30 to consider a report submitted by an engineering commission headed by D. O. Towl, vice president of Andian National Corporation of Toronto, concerning proposed routes for pipe line outlets for the Iraq field in Mesopotamia, which is regarded as one of the world's greatest undeveloped oil fields. Officers of the company, when questioned after the meeting, would make no statement, save to say that the problems which must be solved before the development of the field can be commenced are of a varied and complex nature and that solutions for all of them have not yet been found.

The inference is that no decision was reached regarding the pipe line. The new field is about 500 miles from the Mediterranean Sea and about equidistant from the Persian Gulf; and it is estimated that it will take about two years to construct the line, after all plans are complete.

Directors who attended the meeting represented the Royal Dutch Shell Group, Anglo-Persian Oil Company, Compagnie Francaise des Petroles, and the Near East Development Company, who share equally in the ownership of 95 per cent of the stock of the Iraq Petroleum Company. The Near East Development Company is a corporate body in which are pooled the interests of a number of major American oil companies.

New Mexico to Tax All Oil Rights

Santa Fe, N. M.—An effort to increase property tax valuations in New Mexico has resulted in the state tax commission declaring that all oil rights will be subject to taxation this year.

In the past lands in the southeast part of the state where the major oil development is going on have been assessed at their surface values as grazing or farm lands. The fact that there may be oil under these properties has been ignored from a standpoint of taxation, although the sale price has taken this into consideration.

Feeling is running high in the sections affected, it is reported, and some concerted action on the part of property owners is expected. Because of the fact that a man who owns land on which a lease is in operation may have tests on his land turn out to be dry holes and thus destroy the oil value of the land entirely, the owners in this district feel that the tax is an unfair tribute load upon a gamble rather than on a tangible value.

Line to Judkins

Midland, Texas.—Magnolia Pipe Line Company is starting work on a 10-mile six-inch extension line from its West Texas system to enter the Judkins field, Ector County, as a common carrier as result of having contracted to handle 5000 barrels of crude daily for Cosden Oil Company for nine months, or more. Magnolia has a partially filled eight-inch line, which extends from Winkler County to its Midland terminal, and the nearest point is 10 miles north of the Judkins field. Cosden Oil Company is the discoverer and largest producer in this field, and has arranged to gather the oil and turn same into two 80,000-barrel tanks on University A and C leases, Section 1, Block 35. Magnolia Pipe Line Company will erect its field station on one of the two leases, and take the oil from storage, then deliver same to storage tanks adjacent to the Cosden Oil Company's refineries, located east of Big Spring, Texas, a distance of about 85 miles.

Another West Texas Well Makes Depth Record

San Angelo, Texas.—Honors for the deepest drilled hole outside of California remain in the Big Lake field, but were shifted to a new owner early this week. Big Lake Oil Company's University 3-C, which has been drilling with a loaded hole since encountering a flow of high gravity oil and considerable gas at 8375 feet, was drilling in a mixture of sand, shale and calsite at 8525 feet Monday morning to barely eclipse the former record for the field. It is being drilled with cable tools, with 5-3/16-inch casing cemented at 7806 feet.

Big Lake field holds the record for deep oil and gas production through the Group One Oil Corporation (Continental Oil Company's) University 1-B, which blew in as a small producer at 8500-8523 feet late in November, 1928, and gradually increased its flow to a peak of 3008 barrels of oil and about 28 million cubic feet of wet gas. This record producer gauged 2856 barrels of high gravity oil and 27,370,000 cubic feet of gas during the 24 hour period ending 7 a. m. February 17, with about 190 pounds back pressure. The flowing pressure of the well is too great to apply more back pressure. University 1-B has produced about 1,065,000 barrels of high gravity oil.

Big Lake Oil Company's University 1-C is drilling in shale with cable tools at 8382 feet, and is making slow progress because of cavings. The same company's University 2-C is temporarily completed in sandy-lime formation at 8201-8232 feet, and is averaging 620 barrels of oil and 13,222,000 cubic feet of gas, with production gaining each week. This latter well promises to repeat the performance of the discovery well on an adjoining lease in registering production gains. About 49 pounds of back pressure is being applied to the well.

Group One Oil Corporation's University 3-B was succesful in sidetracking drill stem at 2990 feet, and cemented a string of 13-3/8-inch casing with 1200 sacks at 3037 feet, with a total depth of 3348 feet. The same company's University 2-B is drilling shale at 5890 feet. Both of these tests are scheduled to go to the deep horizon with rotary.

Tulsa.—The greatest earning year in the history of the Prairie Oil & Gas Company was 1929, when its net earnings, after depreciation, depletion and taxes, was $14,563,746.44, or equal to $5.99 a share. This compares with $10,541,597 in 1928.

Tulsa.—Transcontinental Oil Company has purchased all of the assets of the Fuhrman Petroleum Company of Okmulgee, Oklahoma. One million dollars was paid to Max Fuhrman, president and principal stockholder, and $500,000 will be paid out of oil that is produced from the properties, which are in Oklahoma and Kansas.

Oklahoma--Kansas Field Notes

WARREN BAKER, *Staff Representative, Tulsa, Oklahoma*

Drilling in Shurr Pool Restricted Under Operators Agreement

WICHITA. — The Schurr pool of southwestern Rice County, Western Kansas, continues to look more promising as a result of the last two completions, and for that reason it was again watched more closely last week than any other area in the state. Indications are that the new deeper producing horizon found there is probably a prolific one.

Last week the second completion in this new deep stratum was completed. It was Independent Oil & Gas Company's Metzger 1, SW NE Section 21-20-10w, which had the Siliceous lime at 3331-32 feet and was swabbing at the rate of 25 barrels per hour. It made exactly 221 barrels in a seven-hour test. The oil tests 43.5 gravity. Swabbing fails to lower the fluid level more than 1000 feet.

Producers & Refiners Corporation's Thompson 1, SE NW Section 21-20-10w, continues to swab 20 barrels per hour. This is the discovery well of the deeper Siliceous lime producing formation. It looked like a sure failure when it encountered the upper formation from which the original well is producing and was sent deeper and uncovered the new stratum.

Last summer the first well was completed in the region when Steinbuchel & Hilligoss drilled Schurr 1, SEc SW Section 21-20-10w, which made 100 to 125 barrels of 53 gravity oil at 3289 feet. Later, T. B. Slick purchased the well and lease. As a result of the deeper production this well was deepened four feet to 3284 feet, last week. It made 35 barrels of oil and 10 barrels of water in two hours. It was swabbed down to 800 feet of the bottom with no increase in water.

Because of the increasing importance of the Schurr area, Tom C. Johnson, umpire for the Kansas proration committee, has called a meeting of Kansas producers to ask them to take steps to slow up drilling in the area. Drilling is at a minimum now, but with the new completions a number of companies have signified their intention of starting new wells.

Voshel Pool

The Voshel pool of McPherson County was being gauged for its potential gauge last week and was estimated 12,250 barrels from seven wells. The field has been divided into classes "A" and "B" and the two classes opened on different days.

Empire Oil & Refining Company's Voshel 2, SE NE Section 9-21-3w, was drilled to 3336 feet in the Wilcox sand topped at 3328 feet. It made 815 barrels in 10 hours. It is now under 25 per cent proration.

A well due for immediate finishing is the Sinclair Oil & Gas Company's Voshel 1, SW NW NW Section 10-21-3w. It topped the Viola lime at 3325 feet, the Wilcox sand at 3352 feet and at 3361 feet had a hole full of oil.

Gypsy Oil Company's Krebhiel 1, SWc Section 3-21-3w, is making 8,000,000 feet of gas from chat at 3070-75 feet. It is drilling ahead.

BULLETIN

Kansas operators in a meeting at Wichita Monday tentatively agreed that drilling should be restricted in the new Schurr pool, Rice County, for several months at least. Present producing wells are to be pinched to 50 barrels daily. A meeting to ratify or amend this action has been called for Friday.

The Voshel pool, McPherson County, Kansas, will be allowed to produce 3050 barrels daily from its seven Wilcox sand wells and Viola lime well under the 75 per cent proration plan for the next 15 days.

Greenwood County

Two new pools have been opened in Greenwood County. Prairie Oil & Gas Company and Lloyd Parrish have made a Bartlesville sand producer from their Moran 1, SWc NE Section 16-25-12e, one and one-half miles southeast of the Patterson pool. The Bartlesville sand was from 1578-1600 feet, with the bottom of the hole at 1603 feet in shale. After a 80-quart shot it was good for 75 barrels daily.

Derby Oil Company's Beever 1, Section 25-24-12e, two miles southeast of the new Prairie-Parrish well was good for 75 to 100 barrels after a 60-quart shot in the Bartlesville sand at 1618-57 feet.

Western Kansas

Many expiration of leases in various counties of Western Kansas during late 1930, 1931 and 1932 promises an active drilling campaign for that area, unless the oil companies succeed in inducing land owners to grant them renewals without drilling obligations. This is true in the central area of Kansas, too, even more so than in Western Kansas, especially in McPherson County. It is understood that a number of concerns are wanting to drill community wells.

Milmac Oil Company's Mohr 1, C NW Section 11-18-16w, southeast of LaCrosse, Rush County, is estimated to have found 3,000,000 cubic feet of gas at 1950-75 feet, which is unusually shallow for this district.

The Johnson pool in northwestern Ellis County received another failure when Barnsdall Oil Company's Johnson 2, SE NE SW Section 9-13-19w, topped the Oswald lime at 3617 feet and after a slight show of oil encountered water at 3637 feet.

White Eagle Oil & Refining Company's Lorenz 1, C NE SW SE Section 25-27-5w, important wildcat northwest of Cheney, eastern Kingman County, had a hole full of water in the Siliceous lime at 4268 feet and will be plugged.

Watchorn Oil & Gas Company's Morrison 2 C NW NE Section 20-32-21w, in Clarke County, and the deepest test drilling in Kansas, continues to make hole and is now below 6237 feet.

Oklahoma City Potential Raised; Lines Approaching Limits

TULSA. — Potential production of the Oklahoma City field has increased to approximately 600,000 barrels per day as a result of completion of large wells. This is taking into consideration the water intrusion.

As a result of the growing number of wells and the increasing potential, some of the pipe line companies in the field are experiencing trouble in handling all of the oil being turned to them. On the other hand two purchasing companies in the pool are getting next to nothing. This situation developed during the recent difference of the crude oil price. The price situation has been cleared up now, and the situation may right itself.

The handling of oil in the Oklahoma City field is made all the more complicated by the fact that there is no storage in the field. Companies have only working tanks on the leases, and stocks at the pipe line stations are practically filled.

At the recent curtailment conference here it was agreed that the pipe line companies would run 81,000 barrels per day. For the most part production has been held to this level by producers, but the situation as now exists with a few com-

An Engineering Achievement In Pipe Protection

THE

Emsco

Free-Circulation PROTECTOR

Due to the method of locking, the Emsco Protector obtains a grip that eliminates all possibility of slipping, turning, piling or overlapping. Note large circulation space.

1.—performs every function required of a protector, with higher efficiency and longer life than previously has been possible.

2.—overcomes every serious disadvantage or difficulty heretofore resulting from the use of drill pipe protectors.

3.—and yet offers additional advantages, exclusively Emsco, which are possible only in a protector of this design and construction.

Although announced publicly now for the first time, the Emsco Free-Circulation Protector is not new. It has been in service in a large number of wells over a period of many months. It has been severely tried and every claim made for it has been proved in actual service over and over again.

Get This Data Now!

Our descriptive circular gives complete information regarding the design, construction, performance and advantages of the Emsco Free-Circulation Protector. Just write your name and address below, tear this out and mail to us, and we will send you this complete data immediately.

Entirely new ..... entirely different ..... and so much better that there is no comparison

EMSCO PROTECTORS

—do not restrict circulation. The circulation space provided is greater than the volume of fluid forced through the rotary hose.

—obtain a tighter, firmer grip and cannot slip up or down or around the pipe—they cannot pile or overlap.

—last from four to ten times longer under the same service conditions.

—withstand more abuse. Both the rubber body and offsets, or "bumpers", are cured flat under 200 tons pressure and embody no destructive expansion strains when on the pipe.

—cannot snap off the pipe while in the hole or when coming out. The steel cage holds it firmly and protects it from injury from any cause.

—can be installed in 35 seconds without the aid of intricate or heavy accessories of any kind.

—can easily be unlocked and taken off the pipe, however, when pulled out.

—are lighter in weight, making them easier to handle and adding less weight to the string—yet they are much stronger and more durable in every way.

—insure a dry job—the free circulation space prevents pulling the fluid out of the hole when coming out.

—stack better in the rig, require less space, and are easier to handle. Will not roll, can be stacked on ends or sides, quicker and easier, and they stay put.

There never has been a protector like this. Even if you have tried them all you must use the Emsco to get 100% performance, service and results. Write us now for complete information.

E. M. SMITH COMPANY

637 So. Clarence St., Los Angeles, California

panies handling most of the oil, may bring about a further reduction in the amount of allowable outlet from the field.

The last part of this week production was exceeding the pipe line figures and the situation was growing more important, although some connections were being made by the two heretofore not handling much of the oil. One day production was near a peak when it made 133,407 barrels with 23 wells open, 76 shut in. Later it was running from 80,000 to 87,000 barrels per day.

A large number of completions continued to feature the field during the week, but none of them offered extensions. During the next couple of weeks imporant things are expected to happen in the field, however, as a number of tests on the edges of the pool are about ready to drill in.

Magnolia Petroleum Company's Noble 1, NW SW SW Section 30-12-2w, east of Fair Park, a wildcat in Oklahoma City, which showed gas some time back, is being abandoned at 6350 feet, where it was plugged back to after drilling to 7173 feet.

New 'Pimple' South of Earlsboro Appears Small But Prolific

TULSA.—Amerada Petroleum Corporation, Dixie Oil Company and Mid-Continent Petroleum Corporation's Grounds 1, SE NE NE Section 22-9-5, semi-wildcat south of the Earlsboro pool, western Seminole County, flowed 3885 barrels of oil in 14 hours against 45 pounds back pressure. Total depth is 4214 feet in the Wilcox sand. It is now shut in and will not be opened for 10 days or two weeks.

This well has opened a new producing "pimple" on the edge of the Earlsboro field. The new producing area is not expected to be large as it is pretty well defined, but it appears quite rich. This was considered one of the most important developments in Oklahoma during the week.

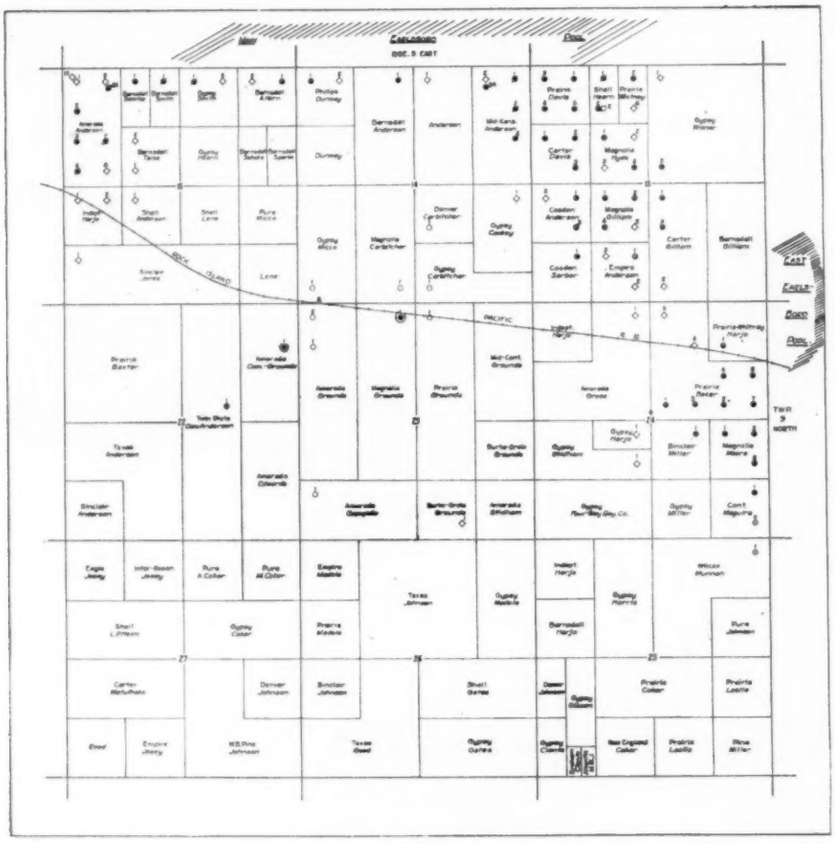
It is hoped that drilling can be kept to a minimum, and the discovery well may be shut in. Just a few days prior to the drilling in this well Magnolia Petroleum Company drilled in Grounds 1, same section, and it is a good well on the pump.

New St. Louis Area Looms

Ranking second to the South Earlsboro extension was the showing of the Keister and Manning Rowlett 1, SW SE NE Section 30-8-4, north of the Pearson pool, in the St. Louis district of the Greater seminole area. This well is about 125 to 150 barrels per day of 32.6 gravity oil at 62 temperature.

The Hunton lime was found in the well at 4465 feet and penetrated to 4471 feet. It is flowing by heads into the slush pit. It is running low, and from its performance appears similar to Amerada Petroleum Corporation and Indian Territory Illuminating Oil Company's Vineyard 1, Section 15-7-3, drilled several months back.

Atlantic Oil Producing Company, Wofford Drilling Company and R. A. Irwin's Morgan 1, NE SW SE Section 4-7-4, which recently opened up the Wofford extension to the St. Louis field, is flowing more than 400 barrels per day after being revived. It is now running tubing to put on the pump. This well is producing from the Hunton lime. It was bradenheaded and drilled to the Wilcox sand but has now been plugged back. Several completions are expected in the area at once.



South extension of Earlsboro Field

Konawa Extended

Tulsa.—An important extension was made to the Konawa pool of Seminole County last week. Several other tests that would extend the field are showing good and expected to develop something definite at once.

Independent Oil & Gas Company's Okfuskee 1, NW SW NW Section 16-6-6, first extended the field to the south when it made 50 barrels in six hours from a broken sand at 2895-2902 feet. It will probably be deepened. This carried production one-half mile south.

Coming right on the heels of this well was McCulloch Oil Company and Carter Oil Company's Gulley 1, NW NE SW Section 16-6-6, one-quarter of a mile southeast of Independent Oil & Gas Company's Okfuskee 1, which made 662 barrels of oil in 24 hours from sand at 2918-28 feet.

Garfield County

Tulsa. — Attention of oil operators was again called to north-central Oklahoma last week when Continental Oil Company's Brown 1, C N½ NW SW Section 10-20-4w, between Covington and Marshall in Garfield County, had the Oswego lime at 5035 feet, with the first show of gas at 5080 feet. It was estimated making 10,000,000 feet of gas from 5095-5100 feet, and during a 24-hour period to have dripped 800 gallons of gasoline. Upon drilling to 5117 feet the gas had increased to 5,000,000 feet and was still wet. It will be drilled to the Wilcox sand unless big production is found.

Tulsa. — Recent extensions to the Palacine area of Stephens County, Southern Oklahoma, is the principal attraction in that district. Dun-Mar Oil Company's Randle 1, SEc Section 8-2s-6w, has extended the field one-half mile southeast with an initial flow of 456 barrels of 35 gravity oil. This flow was made in 19 hours. It is also estimated making 8,000,000 feet of gas from sands at 2847-73 feet.

North and West Texas Field Notes

H. H. KING, *Staff Representative, Fort Worth, Texas*

Judkins Area Threatens Big Flush With No Control in Sight

SAN ANGELO, Texas.—Operators in the Judkins field, Ector County, are in need of a leader to institute a movement that will result in a curtailment of drilling and production before the situation gets beyond control. More than 20 tests are scheduled to be under way in the field before the close of February, with five completed flowing wells capable of producing 5000 barrels of 34-35 gravity oil daily. Field storage and pipe line connections are being provided to market the oil, while crude contracts in effect and under negotiation will make it difficult to limit the output of the field to less than 20,000 barrels daily should an equitable plan of proration be applied later.

The trend of new drilling is to the north of established production, and in taking this course the number of operators in the field will be doubled, thus making it more difficult to work out a conservation program that will satisfy and fit the needs of all parties. Development of the field has reached a stage that it can safely be classed as a major potential source of high gravity sulphur oil, and is the only area in West Texas that offers immediate prospects of an active drilling campaign. Lease ownership is about equally divided among independents and major interests, and all offset locations are being taken care of promptly. Operators holding high priced leases are inclined to drill now and participate in the known flush output so as to begin realizing on their investments.

Near Pipe Lines

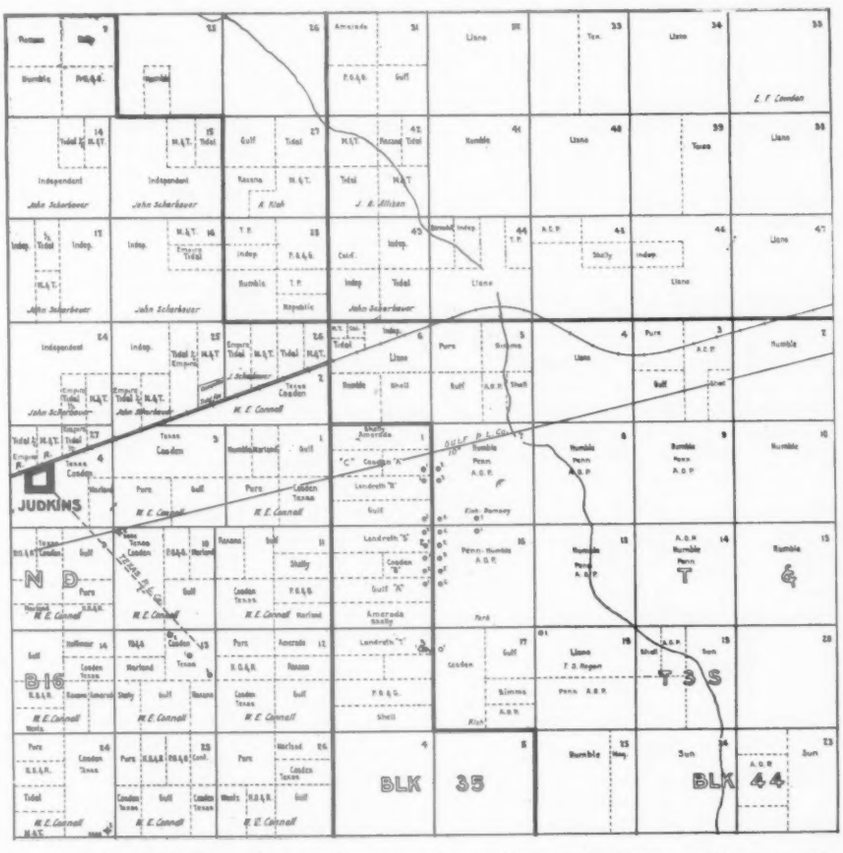
The Judkins field is favorably located for the various pipe line companies that built to Winkler County. The field is crossed by the Gulf Pipe Line Company's 10-inch carrier, and less than 10 miles to the north Atlantic Pipe Line Company has a 10-inch line, with Magnolia Pipe Line Company's eight-inch carrier slightly nearer. About 18 miles to the south of the field, Humble Pipe Line Company has a combination eight and 10-inch system, while a few miles further south The Texas Pipe Line Company has a 10-inch line, and Shell Pipe Line Company two six-inch lines. Although this vast amount of transportation facilities are close at hand, the owners of the lines are not favorable to taking on any appreciable volume of "outside" oil, while they are participating, or will share liberally in the production of the field with controlled oil.

Available data on oil possibilities in the Judkins field indicates that it will be very similar in type to the Church-Fields-McElroy field, Crane County, but more of a threat to the general crude situation. The latter area never became a serious disturber for the crude market, because of it being isolated from railroad facilities, and production was held to a level that would balance with field storage and pipe line outlets, while the major portion of the oil area is controlled by Gulf Production Company through its McElroy ranch property.

The oil produced in the Judkins field is badly contaminated with sulphur, with some samples recording 2.52 per cent. The gas production carries a sulphur content ranging from 3.15 to 4.6 per cent. The average oil producing horizon is at the 3600-3700-foot level.

Drilling Conditions

Cable tools and oil engines for power are used by Judkins field operators. The average drilling time is about 45 days, and quite a few of the companies are making use of their own tools. Contractors receive $3.50 per foot for



The Judkins field, Ector County, has escaped curtailment of drilling, and is a production menace for the West Texas district

JUDKINS FIELD, ECTOR COUNTY, TEXAS

Completed wells in the Judkins field are listed below:

Operator—	Elev.	Top Salt	Top Lime	Producing Horizon	Total Depth	Date Comp.	Initial Prod.	Oil Gravity	Daily Prod.
Cosden Oil Company's									
University 1-A	2914	1055	3265	3596-3760	3760	2-13-30	1260	34.5	665*
University 1-B	2890	1095	3304	3572-3678	3678	2- 3-30	2400	33.4	150*
Humble-Penn et al's									
Kloh 1-D	2925	1230	3410	3715-3744	3744	10-12-29	380	35.0	100*
R. L. York 1	2921	1240	3410	3753-3785	3785	1- 7-30	500	33.5	100*
Landreth Production Corporation's									
University 1-S	2894	1080	3255	3598-3695	3695	1-21-30	950	34.2	715*
University 1-T	2871	1215	....	3135-3138	3175	2- 1-30	5 Mil. ft. gas		
The Texas Company and Cosden Oil Company's									
W. E. Connell 1	2847	875	3170	3465-3482	4002	12-28-26	40	35.2	SD
W. E. Connell 2	2844	870	3177	3471-3487	3515	6-30-27	35	35.2	SD
W. E. Connell 3	2848	863	3179	3499-3545	3545	6-30-27	25	35.2	SD

(*) Flowing wells and pinched.

drilling. Drilling conditions are favorable, with operators getting by with one string of pipe less than was needed on the average well in Crane County. Completed flowing wells in Judkins field are expected to average about $30,000 each.

Cosden Oil Company pioneered the field with a small producer on the Connell ranch, located several miles southwest of the area now receiving the bulk of the field work. The first production was found in December, 1926, and two other tests drilled on the discovery tract proved disappointing. A one-half interest in these wells and the acreage was sold to The Texas Company. Two more tests drilled by the partnership proved dry, so activity was halted in 1928. Payment of rentals on the leases was resumed in February, 1929, by The Texas Company rather than to operate the small wells. In connection with the deal with Cosden Oil Company, The Texas Company contracted to finance all drilling out of oil production, if any, and also obtained the right to market all oil produced along with an obligation to provide a market outlet. The eastern portion of the original Connell block is expected to share in the flush production now appearing in the field.

Cosden Oil Company strengthened its position in the field by acquiring leases on University fee lands, which now appear to be the high point of the structure, and has three 80-acre tracts to develop. In connection with this development the company has contracted with Magnolia Pipe Line Company for the shipment of 5000 barrels of oil daily for nine months on a common carrier basis. The latter is building a six-inch extension line into the field, and will transport the oil to Cosden Oil Company's refineries, located east of Big Spring, Texas, a distance of about 85 miles. Cosden Oil Company is erecting two 80,000-barrel steel tanks in the field, and will deliver crude to Magnolia Pipe Line Company from same. This arrangement will permit the company to operate a portion of its refinery capacity on controlled oil.

Landreth Production Corporation has obtained a market outlet for 1500 barrels of Judkins crude daily for one year with Burford Oil Company which is extending its line into the field. The latter has also made arrangements for crude from the jointly owned leases of Skelly Oil Company and Amerada Petroleum Corporation. Skelly et al are moving in materials to drill their first test 993 feet from the north and 440 feet from the east lines of Section 1, Block 35, with three offsets required by adjoining lease owners.

Humble-Penn-Atlantic interests have six solid sections on the west side of the field, with two completed wells that are pinched to 100 barrels daily, and served by a two-inch line from Gulf Pipe Line Company's carrier. These interests are getting under way, or drilling on eight tests along the west side of their leasehold, and will probably have to drill 16 in a solid row before offsets are all taken care of. The drilling of Kloh 1-D on the six-section block by Humble et al last October revived interest in the area, and led to the present drilling campaign, although other operators were considering a test in this general direction from the first group of wells when the outpost test was authorized.

Tidal Oil Company and Independent Oil & Gas Company have pooled about 1300 acres in scattered tracts to the north of the field to develop on a 50-50 basis, with the latter operating. A tentative location has been placed in the southwest corner of the SE Section 43, Block 44, T&P Ry Survey, T-2s, but the location may be changed should the acreage pool be enlarged to take in other nearby lease owners.

Jack County Wildcat Well Increases Flow

Wichita Falls, Texas.—Prairie Oil & Gas Company's deep wildcat producer on the Munson land, Jack County, increased its flow to 200 barrels of 41 gravity oil daily when deepened to 4703 feet, thus becoming one of the deepest wells in North Texas.

This wildcat encountered the lime horizon at 4691 feet. It has not been shot.

Two lease owners to the west are starting offsets.

The well is located on the west line of the BS&F Survey No. 3, and several miles east of the nearest shallow production.

Development is getting started on leases surrounding the discovery well of the Kewanee Oil & Gas Company on the Montgomery farm, Cooke County, where a 35-barrel pumper was completed last week in sand at 1186 to 1201 feet. This wildcat producer is located more than a mile southeast of the Dennis pool.

Forty idle tests were credited to Wilbarger County late last week as result of all major companies buying crude in the county enforcing a rigid crude buying policy. The county reported 17 active tests, and nine additional derricks and rigs, making a total of 66 operations. Since the first of the year Humble Oil & Refining Company and Sinclair Crude Oil Purchasing Company have been running oil from operators, but paying for only 50 per cent, with the remainder going to storage at the producers expense.

The Texas Company began enforcing a similar policy Monday morning in Wilbarger County and all other sections in North Texas.

Carson Production From Granite Ridge

Amarillo, Texas.—Empire Gas & Fuel Company's wildcat strike on the south side of the granite ridge in Carson County, increased its flow to 100 barrels of high gravity oil per hour when deepened to a second layer of granite wash formation at 3220 to 3232 feet. This well was reported last week as having made 25 barrels hourly at 3200 to 3205 feet. It is located 10 miles from the nearest oil production and is considered an important discovery since operators have heretofore taken it for granted that the south flank of the well established ridge would be barren of oil in commercial quantities. The flow of the well was pinched to 185 barrels daily Sunday, and the owner is preparing to lay a five-mile line to market the crude in tank cars over the Santa Fe, as pipe line companies refused to extend their lines to the well.

In Gray County Fred Devore, Robertson and associates' Saunders 1, registered an initial flow of 825 barrels during the first 17 hours after being shot with 380 quarts at 2990-3075 feet. This well offsets production, and is in the northwest quarter of Section 40, Block 3. Prairie Pipe Line Company has connected and agreed to run 100 barrels daily, while storage is being provided by the well owners for their surplus output.

San Angelo, Texas.—Southern Crude Oil Purchasing Company's McKenzie 1, located about three miles due south of the Taylor-Link field, Pecos County, developed an estimated flow of 10 million cubic feet of gas from sandy lime at 1440 to 1461 feet, with a total depth of 1497 feet. This semi-wildcat gasser is located in the northeast part of Section 10, Block 604, and is a south offset to a 10-barrel pumper owned by Buell-Hagan et al. The latter is producing from sand at 1320 to 1332 feet, and was completed last June.

The McKenzie gasser will run casing and make try for oil production.

Van Production to West Found Deeper; More Wells Start

CORSICANA, Texas.—Extension of the oil producing area in the Van field on the west side of the dome was assured early this week when the Pure Oil Company's R. C. Crim 1 cored oil saturated Woodbine sand at 2880-91 feet, where operations will be temporarily halted to cement a string of seven-inch casing before drilling in to complete. This outpost well established a sharp dip in the key formations to the west, and is the deepest hole in the field. It is located in the southeast corner of Lot 4, Nacogdoches School Land Survey, and more than 3000 feet from the nearest producer. The elevation is 483.4 feet.

Pure Oil Company, unit operator in the field, was completing two new producers to the northeast of production early this week, with production assured. Sun Oil Company's I. W. Thompson 1, which cemented seven-inch casing at 2461 feet after coring into first Woodbine sand at 2465 feet, was coring at 2693 feet Monday. The Texas Company's W. White 1, a west offset to the above test, was coring oil saturated sand at 2610 feet after landing casing at 2443 feet. These two tests will be carried further into the sand horizon, then run liner and tubing before an attempt will be made to complete.

Seven rotary rigs were moved in late last week on as many new locations to take care of necessary offsets created by the completion of the eight wells on production in the field. Four of these new locations were spotted on leases owned by Pure Oil Company; two on The Texas Company's contribution to the unit plan; and one on the Shell Petroleum Corporation's I. P. Tunnell lease. Steel derricks were purchased for the drilling of these locations, and the actual drilling will be performed by rotary drilling contractors.

Production of the Van field is now being restricted to about 7800 barrels daily, or an average of less than 1000 barrels per well. Tank car shipments of crude from the field are now balancing with current production.

Wildcat exploration work in the Central East Texas district, and radiating in all directions from the Van field, is steadily increasing in volume. Independent companies and operators predominate among those waging a campaign for new Woodbine sand areas, and those possessing drilling blocks with favorable geology are meeting with success in financing the projects through lease and royalty sales. Freestone County has lately been popular with lease buyers.

Dixie Oil Company, subsidiary of Standard Oil Company (Indiana), has acquired an undivided one-half interest in the 7500-acre drilling block held by the Penn Oil Company and J. R. Black, Dallas interests, in Freestone County, along with some checkerboard leases in Henderson County, for a consideration of $110,000. Penn et al are moving in rotary equipment for a deep test on the B. M. Burgher land, Freestone County, and have awarded contract for the drilling of the test to R. H. Dearing & Sons. The location is 2372½ feet north of the south line and 150 feet east of the west line of the C. Charmar League.

In Henderson County, Cranfill-Reynolds Company has sold an undivided one-half interest in the 3000-acre Pine Grove block to Louisiana Oil Refining Corporation for a reported consideration of $60,000 cash, and the former will bear the cost of a 4000-foot test on the J. W. Broom 100-acre lease, located on the south end of the Samuel Chears Survey. Carl Short has the rotary contract for the drilling of this deep wildcat, and is moving in materials. Leases in the general vicinity of this proposed wildcat test are changing hands at $25 per acre.

E. L. Chapman, Fort Worth operator, has abandoned his wildcat test on the J. H. Hudspeth land, J. C. Dearman Survey, Upshur County, in Austin chalk formation at 4114 feet.

Lea County Production Reached New High in January

ARTESIA, New Mexico.—Two wells in process of completion on the south end of the Lea field, Lea County, are showing for small producers with bottom hole water in evidence. Snowden & McSweeney Company's State 1, Section 1-21s-33e, is running three-inch tubing to pump with oil engine after swabbing 200 barrels oil and a small volume of water from lime at 3800-01 feet. This well extends the producing area three locations to the south, and should it make a commercial producer it will require offsets by Continental Oil Company, Cranfill-Reynolds Company et al and Empire Gas & Fuel Company.

Continental Oil Company's State 2, located between the above semi-completion and the main part of the field, is cleaning out after shot of 60 quarts in lime at 3768-79 feet after plugging back from 3817 feet because of sulphur water. Prior to being shot the well swabbed 60 barrels daily.

Operators in Lea County are holding down field work to a low level, but a revival of field work is scheduled to take place in the Hobbs field when the railroad line now being built by the Texas-New Mexico Railroad is completed about middle of the year.

Storage is being provided by Lea County producers that are affected by the restrictions placed on crude purchases on February 1, thereby avoiding a substantial cut in daily production of the county. The Texas Company is the leading crude buyer in the county, and on the above date limited its purchases to less than 1500 barrels daily. Cranfill-Reynolds Company et al, was given a 500-barrel daily quota on crude sales, and is making arrangements to have about 3000 barrels of its production in the Lea field transported by The Texas Pipe Line Company to Winkler County, Texas, where the oil will be delivered to eight large storage tanks held by Cranfill-Reynolds Company. Texas Pacific Coal & Oil Company, which has been limited to a daily quota of 300 barrels by The Texas Company, is running its surplus production into a 55,000-barrel tank erected on its lease for such an emergency late last year.

Production in Lea County reached a new high mark during January, when a daily average of 6856 barrels was maintained from 17 active wells, with a few on a restricted basis. The county had 10 wells shut in for pipe line connections, or storage. Production figures for January are given below:

Company— Wells	Average Daily Production
The Texas Company et al	
State "A" 2	1305
State "B" 1	5
Lynch 1	1010
Shephard 1	297
Rhoades 1	45
Cranfill-Reynolds Company et al	
State "B" 3	2585
Wilson 1	42
Humble Oil & Refining Company	
Lindley "A" 2	360
Lindley "B" 1	172
Bowers 1	100
Texas Pacific Coal & Oil Company	
State 1	460
Empire Gas & Fuel Company	
Lindley 1	185
State "B" 1	15
Continental Oil Company et al	
State 1	68
Wells 1	*
Lockhart 1	*
A. E. Myers 1	*
Midwest Refining Company	
Capps 1	*
Gregory 1	87
Leach 1	*
State 1	*
Terry 1	*
Skelly Oil Company	
Joiner 1	85
Henderson-Dexter	
McDonald 1	35
Shell Petroleum Corporation	
Thorp 1	*
Walker Oil Corporation	
Terry 1	*
Vacuum Oil Company	
State 1	*

Gulf Coast Field Developments

JACK LOGAN, *Staff Representative, Houston, Texas*

Refugio Production Still Climbs; Line Outlet Increased

HOUSTON. — Half a dozen new wells were completed at Refugio during the past week, and over twice that number are now in process of completion, with casing set over promising sands.

Production has been steadily increasing, and during the week ending February 15 a new peak was established. For that period the field showed average daily output of 37,400 barrels. Including the six new ones there are now 90 oil producing wells at Refugio.

Gulf Coast Pipe Line Company (owned by the William F. Morgan interests, San Antonio), which supplies the only pipe line outlet for Refugio crude, completed looping its line over a week ago, and consequently now has in operation a six-inch and an eight-inch line, with booster station at Bayside, midway between the field and the terminus of the line at Port Aransas, where tankers are loaded.

This pipe line system is not moving as much oil yet, however, as it will be able to handle within a short time. It is reported that additional pumps have been purchased for use on the line, and that they are now being installed. Announcement was made two weeks ago from offices of Gulf Coast Pipe Line Company that following completion of the new eight-inch line the capacity of the system would be not less than 25,000 barrels daily. Following installation of additional pumps, however, it is probable that the system can handle around 35,000 barrels daily — 20,000 barrels through the eight-inch and 15,000 barrels through the six-inch. The total length of the line from Refugio to Port Aransas is approximately 32 miles.

Gulf Coast Pipe Line Company recently contracted to supply The Texas Company 600,000 barrels of Refugio crude, to be delivered at the rate of 100,000 barrels monthly, beginning March 1, and it is reported in Houston, although the report has not been verified, that Gulf Coast Pipe Line Company and the Cities Service interests have entered into a contract which they have had under consideration for several weeks, providing for purchase by the latter of approximately 3½ million barrels of Refugio crude, to be delivered at the rate of 10,000 barrels daily for one year. The Cities Service interests had previously purchased 1,000,000 barrels of Refugio crude from Gulf Coast Pipe Line Company, for use in its Braintree refinery, Boston harbor, and that contract has not yet been entirely fulfilled.

Aside from the movement of Refugio crude to tidewater by the pipe line company, the steadily increasing production is being run to storage and is going out of the field by railway tank cars. Storage facilities in the field include four 55,000-barrel steel tanks of the William F. Morgan interests, two 80,000-barrel tanks owned by United Gas Company but being used by the Morgan interests, one 80,000-barrel tank of Independent Oil & Gas Company, and two 55's of Houston Oil Company.

Rail Shipments

Sun Oil Company is shipping Refugio crude to its refinery at Toledo, Ohio. The W. L. Pearson interests are making tank car shipments to the Great Lakes region for use as fuel. Other tank car shipments include those of United Gas Company and Houston Oil Company.

Most of the Refugio oil production is from the 3700-foot horizon and tests around 24 gravity. The posted price of that oil is 55 cents. In addition the field is producing around 2000 barrels daily of a lighter oil, testing around 30 gravity, and found at the 5500-foot horizon. The price of that high gravity oil is now around $1.00 per barrel, a gravity scale applying.

Deep tests in the eastern portion of the field still constitute the most interesting feature of Refugio field development. Houston Gulf Gas Company has set 5-3/16-inch casing at 5872 feet in M. F. Lambert 1 to test a promising new oil sand encountered at 5879-81 feet. Through a drill stem test a week ago this well showed 15 fourbles of oil which is different from that produced by the 5500-foot wells. M. F. Lambert 1 is a semi-wildcat, located two miles northeast of the nearest oil producer, Union Producing Company's O'Brien 1, the discovery well of the 5500-foot sand. On February 18 the semi-wildcat was still standing cemented.

Wells Due

Although there are as yet only three wells producing the high gravity oil from the 5500-foot sand in the eastern portion of the field, there are now three additional wells due to be completed in that sand immediately. Union Producing Company's O'Brien 2 has set 4½-inch casing to test showing of oil at 5554-68 feet, and is now waiting on cement to set. The same company's Shelton 1 cored shale and gumbo at 5591-94 feet, and is now coring at 5610 feet. Independent Oil & Gas Company's Shelly 1 has set 8¼-inch casing at 5481 feet for a test, having encountered a good showing of oil at 5487-91 feet.

Completions at Refugio during the past week included six wells, all oil producers. Houston Gulf Gas Company's Morgan Vance 2 came in flowing 300 barrels daily through a 3/16-inch choke, and showing 300 pounds pressure. Morgan Oil Corporation's Swift 1 came in flowing 600 barrels pipe line oil daily at 3676-96 feet, and its Fox 1, Block 71, came in for 1200 barrels at 3705 feet. Saxet Oil Company's Cable 1, Block 20, came in flowing 1000 barrels daily at 3686-95 feet. Independent Oil & Gas Company completed West 2 for 700 barrels initial production at 3677 feet. Houston Oil Company's Rea 2 came in flowing 500 barrels fluid, 70 per cent oil, daily at 3683 feet.

In addition to the three 5500-foot wells mentioned above, there are various other wells at Refugio nearing completion. Union Producing Company's Cummings 3 has set 8½-inch casing at 3637 feet to test an oil showing sand at 3637-51 feet; its J. F. B. Heard has set casing at 3668 feet; Shelly 9 has set casing at 3660 feet to test oil and gas sand at 3660-92 feet; and Rose Lambert 1-A is drilling shale and lime at 4733 feet.

Houston Gulf Gas Company, which like Union Producing Company is a subsidiary of United Gas Company, has set casing at 3679 feet in O'Brien 6.

Independent Oil & Gas Company's J. F. B. Heard 1-B has plugged back to 3666 feet. Morgan Oil Corporation's Town Block 32 well has set 8¼-inch casing at 3680 feet to test oil sand at 3681-87 feet. Larco Oil Company's Strauch 2 has set 6⅝-inch casing over sand at 3671-3706 feet.

Humble

Houston. — Although the southeast, south and west flanks of the Humble dome have been claiming much of the interest connected with that field during the past several months, the week that has just passed was featured by completions of good wells on the north and the east flanks of the dome. On the north flank West Production Company brought in Foster Lumber Company 2 for 1750 barrels initial production at total depth of 4541 feet, with 700 feet of screen set in the broken sand and shale formation from which the production is coming. The production is pipe line oil testing 30 gravity.

On the east side of the field The Texas Company completed Carroll Oil & Gas Company 30 at total depth of 3102 feet. Following setting of 180 feet of screen, the well came in flowing 2500 barrels of 25 gravity pipe line oil daily.

Mills Bennett Gets Well at Allen Dome

Houston.—Mills Bennett Production Company's first test on Allen Dome, Brazoria County, R. Allen 1, was completed during the past week as a 750-barrel producer. Six joints of screen were set in the oil sand at total depth of 4998 feet, and the well came in flowing 41 gravity pipe line oil at the rate of 750 barrels daily through a three-eighths-inch and a one-half-inch choke, registering 350 pounds pressure.

This well is located on the southeast side of the dome in the J. G. McNeel Survey. It is 260 feet northeast of Shell Petroleum Corporation's Allen Bernard 1, which has been the best well of the field.

Mills Bennett Production Company, which was a pioneer operator at Barbers Hill and which discovered the deep sand yielding the present prolific production on the northeast flank of that field, made a deal with Shell Petroleum Corporation in October, 1929, taking over the operation of the latter's properties at Allen Dome. Shell Petroleum Corporation discovered that dome by torsion balance in 1925, and controls practically all of it.

Under the arrangement that was worked out Mills Bennett Production Company will have a one-half interest in the production developed. The cost of two wells will be borne altogether by Mills Bennett Production Company, and subsequent drilling will be on a joint cost basis. Mills Bennett Production Company will have the operation of the whole dome.

Allen Dome is among the earlier geophysical discoveries of the Gulf Coast. The first test proved the dome, hitting cap rock at 822 feet, and subsequent activity there by Shell Petroleum Corporation consisted of about a dozen tests, including four which have produced oil. All the production has been from depths exceeding 5000 feet, and while the wells came in flowing in some cases, they did not hold up as flowing producers except for brief periods, and were soon put on the beam. Allen dome production in 1929 amounted to only 5450 barrels, all from one well, and in 1928 the total production was 17,450 barrels.

Victoria County Test Has Oil-Gas Show

Houston.—Humble Oil & Refining Company has encountered oil and gas, although not in commercial quantity, in J. J. Welder 1, its first deep test of the Nursery prospect, north-central Victoria County. This well is located in the Day Land & Cattle Company Survey A-477, about three miles southeast of the town of Nursery.

Following favorable indications through drill stem test, screen was set in the well at total depth of 5899 feet, with liner set inside 9⅝-inch casing, which was cemented at 4750 feet. After being swabbed the well came in showing 750,000 cubic feet of gas and two or three barrels of light oil. Gravity of the crude is reported to be around 40. The well is now shut in, waiting on orders.

Prior to starting this deep test Humble Oil & Refining Company, which has a large solid block of leases in the district, carried out an extensive core-drilling program.

Although the Nursery prospect is no farther inland than various oil producing salt domes of the Gulf Coast, indications of a salt dome were not found there, and it is located beyond the southwest limits of the regular salt dome country. It is 18 miles due west of the Edna gas field, Jackson County, 40 miles east of the new Pettus oil and gas field Bee-Goliad Counties, and 40 miles northeast of Refugio, which is now the largest producing area along the Gulf Coast.

Two Producers Completed at Esperson Dome

Houston.—Two new wells were completed February 16 on Esperson Dome, Liberty County, by Cranfill-Reynolds Company, which controls the greater part of that new field.

Esperson 4-A came in flowing 480 barrels daily at total depth of 3342 feet. Top of the sand was encountered at 3330 feet, and 6⅝-inch casing was set at 3260 feet. The other new well is Esperson 6-A, which was completed at total depth of 2325 feet, with 9⅝-inch casing set at 2285 feet. One joint of screen was set, and the well came in flowing 100 barrels daily.

Cranfill-Reynolds Company now has six producing wells at Esperson dome, and the total production there is now around 1000 to 1200 barrels daily. In addition there is another producing well on the dome that is owned by Yount-Lee Oil Company.

Cranfill-Reynolds Company is now rigging up on Esperson 7, which is located in the C. W. Fisher Survey, 300 feet southeast of No. 6. The company is drilling around 1500 feet in Davis 2, located in the western edge of the present field.

Yount-Lee Oil Company's Moores Bluff Corporation 2, located on the east side of the present field, 225 feet southeast of No. 1, the discovery well of the field, is now drilling around 6400 feet.

Port Barre

Houston.—Two producers were completed during the past week in the new Port Barre salt dome field, St. Landry Parish, Louisiana, both being good wells.

Gulf Refining Company of Louisiana completed Ovide Lahaye 1 as a 2400-barrel flowing well at 3382 feet after setting two joints of screen in sand topped at 3340 feet. Six and five-eights inch casing was set and cemented at 3336 feet. This well is located in Section 4-6s-5e.

The other new Port Barre producer is The Texas Company's Botany Bay Fee 4, also located in Section 4, on the west side of the dome. Total depth of this well is 3425 feet. Following setting of two joints of screen below 9¼-inch casing that was set at 3375 feet, the well came in flowing 1200 barrels daily.

Port Barre is farther inland than any other producing salt dome of Coastal Louisiana. It was discovered several years ago through use of seismograph by Gulf Refining Company.

Garden Island

Houston.—The Texas Company has abandoned Garden Island Bay 3, wildcat test on Garden Island Bay Dome, Plaquemines Parish, Eastern Louisiana Gulf Coast, at 2000 feet. The well was located in Section 107-23s-32e.

The presence of a dome has been proved there by drilling into salt in one of two wells previously put down by The Texas Company, but no production has yet been established.

The Texas Company recently made location for its fourth test of the dome, Garden Island Bay State 4, in Section 39-23s-33e.

Mallard Bay

Houston.—Shell Petroleum Corporation has junked and abandoned its wildcat, A. Marceaux 1, first test of the Mallard Bay salt dome prospect, Cameron Parish, Louisiana, at total depth of 7230 feet in lime. Shell Petroleum Corporation began rigging up for this test early in September, 1929. Casing in the hole included 13-3/8-inch set at 2465 feet, and 9-5/8-inch set at 5995 feet. Indications of a salt dome were found at Mallard Bay by seismograph in 1928. The location of the well that has been drilled was 495 feet north and 250 feet east of the southwest corner of the southeast quarter of Section 32-12s-3w.

Tulsa.—A series of deals has given Ramsey Petroleum Corporation, of Oklahoma City, control of the Gordon Trust properties in the Cement district of Caddo County, Oklahoma. In the deal 1080 acres with 23 oil wells and one gas well and a daily average production of 128 barrels were secured. These wells are producing from the shallow horizon and will be deepened to the new deeper sand found by Noble-Olsen and Magnolia Petroleum Company. In addition Ramsey Petroleum Corporation plans to drill one test to 6500 feet.

Ramsey Petroleum Corporation now has between 5000 and 6000 acres in the district.

J. D. Isaacks of the advertising department of THE OIL WEEKLY and affiliated publications addressed the Houston Geological Society at its regular weekly luncheon February 18, at the University Club, Houston, speaking on "Progress in Drilling Methods."

Darst Creek Potential Up 50 Per Cent

Houston.—At the middle of February when Umpire H. H. Fitzpatrick had drawn up a new schedule for proration of Darst Creek production from February 16 to 28, inclusive, the field showed total potential production of 71,094 barrels daily from 63 wells, or 1111 barrels per well. Those figures represent increases of over 50 per cent in potential production and in number of wells, as compared with the totals on February 1. At that time there were 37 completed wells in the field, with combined potential production of 46,868 barrels daily.

The Texas Pipe Line Company and Humble Pipe Line Company are still taking 5000 barrels each of Darst Creek crude daily, and Magnolia Petroleum Company is still running its prorated production in its own line. Under the present schedule Magnolia Petroleum Company's production allowance is 1201 barrels daily. Thus a total of 11,201 barrels is the daily market outlet provided for the field under proration. Participating in that total market outlet are 60 wells, with combined potential production of 68,994 barrels, three wells of L. C. Turman, Fort Worth operator, not being included under the proration program. Turman's three wells have combined potential production of 2100 barrels daily, and he is running about 1200 barrels daily from them through the line which he and Grayburg Oil Company built to the latter's trunk line at Luling.

Thus the total actual pipe line runs from Darst Creek are around 12,500 barrels daily, and since the total potential of the field is 71,094 barrels daily, the production under proration is cut down to about 17 per cent of the potential.

Since the new proration schedule was announced several additional wells have been completed at Darst Creek, including two exceptionally large producers. One of them was Gulf Production Company's T. Dix 2, located about the center of the north half of the field. It came in flowing at estimated rate of 7600 barrels daily. Elevation of the well is 504 feet, top of the Edwards lime is at 2530 feet, and bottom of the hole is at 2577 feet.

The other large well, completed February 17, is The Texas Company's Knobloch 3-B, which came in flowing 188 barrels pipe line oil per hour, or at the rate of 3512 barrels daily. Production tested 39.6 gravity at 88 degrees temperature. Surface elevation is 464 feet, top of the chalk was encountered at 1751 feet, and the Edwards lime at 2507-56 feet. This well offsets Gulf Production Company's Posey 3, and is in the central portion of the field.

J. A. Selby, who is in charge of Vacuum Oil Company's land and scouting office at Tyler, East Texas, was married February 1 to Miss Loyis Bernhardt of Houston, and they are now at home at 408 Charnwood Street, Tyler. Before her marriage Mrs. Selby was with the Pure Oil Company at Houston.

Potential and Allowable Production at Darst Creek

Official Proration Schedule Effective February 16 to 28, Inclusive

Name of Producer and Lease	Unit	Well No.	Total No. Wells	Unit or Fraction	Total Potential	Av. Pot'l. Per Unit	Unit Allowance*	Pot'l Allowance	Total Daily Allowance
Abercrombie et al—									
Dix-McKean	A	1	1	1	1980	1980	106	175	281
Empire Oil & Refining Company—									
Dowdy	A	1-2	2	1	1128	564	106	51	157
Dowdy	B	3	1	1	600	600	106	54	160
Total			3	2	1728	1164	212	105	317
Gulf Production Company—									
C. Anderson	A	1	1	1	2940	2940	106	259	365
Tadlock	A	1	1	1	888	888	106	79	185
T. Dix	A	1	1	1	1668	1668	106	130	236
Dix-McKean	D	1	1	1	1770	1770	106	156	262
Dix-McKean	C	2	1	1	1980	1980	106	175	281
W. R. Posey	C	1	1	1	1770	1770	106	156	262
W. R. Posey	D	2	1	1	1560	1560	106	139	245
W. R. Posey	A	3	1	1	1680	1680	106	149	255
Total			8	8	14,256	14,256	848	1243	2091
Humble Oil & Refining Company—									
D. D. Baker	A	3	1	1	960	960	106	86	192
Denman	D	1	1	1	1440	1440	106	127	233
Denman	A	2	1	1	1500	1500	106	132	238
Denman	C	3-4	1	1	4140	4140	106	183	289
Denman	E	5	1	1	1110	1110	106	99	205
Denman	F	6	1	1	840	840	106	75	181
Denman	G	7	1	1	950	950	106	85	191
Denman	B	8	1	1	570	570	106	51	157
Dowdy	A	1	1	1	960	960	106	86	192
Tadlock	A	1	1	1	480	480	106	43	149
S. Wilson	B	2	1	1	1128	1128	106	99	205
S. Wilson	A	3	1	1	768	768	106	69	175
Y. Wilson	A	2	1	1	600	600	106	54	160
Total			14	13	15,446	13,376	1378	1189	2567
Kirby Petroleum Company—									
R. Miller	A	1	1	1	549	549	106	49	155
Penn Oil Company—									
R. Miller	A	1	1	1	465	465	106	42	148
Stroube & Stroube—									
R. Miller	A	1	1	1	360	360	106	33	139
Sun Oil Company—									
Knoblock	D	1	1	1	512	512	106	46	152
Knoblock	B	2	1	1	1020	1020	106	91	197
Total			2	2	1532	1532	212	137	349
The Texas Company—									
L. Anderson	A	1	1	1	744	744	106	67	173
L. Anderson	B	4	1	1	1140	1140	106	102	208
D. Wilson	B	1	1	1	1500	1500	106	133	239
D. Wilson	A	4	1	1	1584	1584	106	141	247
W. R. Posey	B	1	1	1	1584	1584	106	141	247
H. Willie	A	1	1	1	1395	1395	106	124	230
H. Willie	B	2	1	1	1440	1440	106	128	234
H. Willie	C	3	1	1	1485	1485	106	132	238
P. Roamel	A	1-2	2	1	480	240	106	22	128
R. A. Parish	A	1	1	1	780	780	106	70	176
Dowdy	B	1	1	1	540	540	106	49	155
Total			12	11	12,672	12,432	1166	1109	2275
Trinity Drillers—	A	A1-B1	2	1	874	874	106	40	146
R. Miller	A	C1	1	1	840	840	106	75	181
R. Miller									
Total			3	2	1714	1277	212	115	327
United North & South Development Company—									
T. Dix	B	1	1	1	2160	2160	106	191	297
T. Dix	A	2	1	1	2280	2280	106	201	307
Dix-McKean	B	1	1	1	2436	2436	106	215	321
Dix-McKean	A	2	1	1	1260	1260	106	111	217
P. Roamel	A	1	1	1	1152	1152	106	106	209
Total			5	5	9288	9288	530	821	1351
TOTAL			51	47	59,990	56,679	4982	5081	10,000

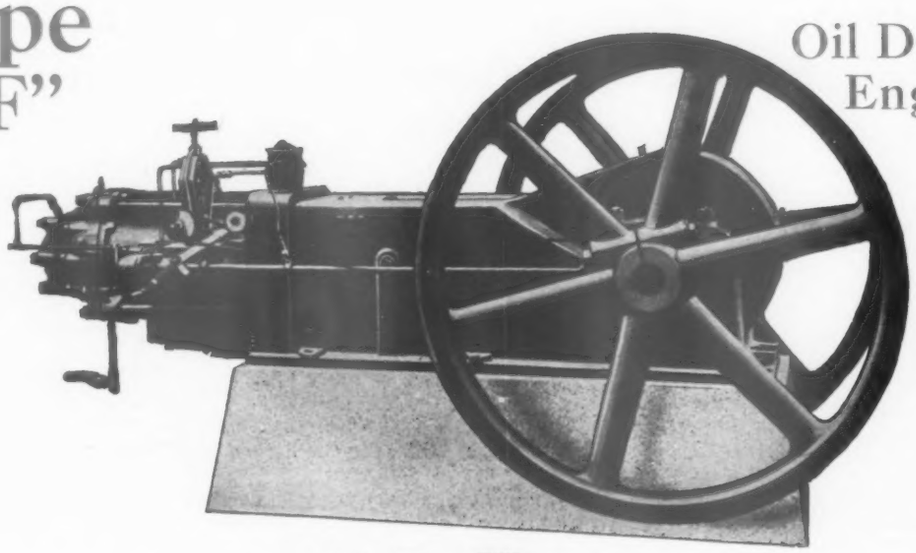
Wells Not Participating in the 10,000 Barrel Outlet, Prorated on the Same Fractional Figure:

Magnolia Petroleum Company—									
T. Dix	B	1-2 3-4	4	1	3456	864	106	76	182
T. Dix	A	5	1	1	1220	1220	106	108	214
R. Miller	D	1	1	1	840	840	106	75	181
Appling	A	1	1	1	1728	1728	106	152	258
Klein	A	1	1	1	1200	1200	106	105	211
Richburg	C	1	1	1	560	560	106	49	155
TOTAL			9	6	9004	6412	636	565	1201

*NOTE: Fraction .382 has been dropped on unit allowance and added to potential allowance.

FRANKLIN VALVELESS

Type "OF" Oil Drilling Engine



FLEXIBILITY

Cable tool drilling demands extreme flexibility in the prime mover—or else the driller can't make hole. The number of prosperous contractors who have standardized on the Franklin Valveless O. F. Oil Drilling Engine is the very best evidence we can offer of O. F. performance—flexibility *plus*. The O. F. makes a hole faster, day after day—and with rare fuel economy, too.

SPEED

Pulling out—bailing—when speed is needed the driller just opens the throttle on the O. F.—and gets all the speed demanded.

Distributed by OIL WELL SUPPLY COMPANY
Branches in All Oil Fields

FRANKLIN
VALVELESS ENGINE CO.
FRANKLIN - PENNSYLVANIA

Louisiana--Arkansas Field Notes

Zwolle Extension Indicates Producing Areas Connected

SHREVEPORT, La. — A three-mile western extension of the eastern part of the Zwolle oil field in Sabine Parish, Louisiana, on a direct line with the older Zwolle producing area in Section 14-7-14, and which serves as a connecting link between the two areas, was the outstanding feature of several important developments in this territory, particularly in Zwolle and Cartersville-Sarepta districts, during the last week.

Lide and associates, including Lion Oil Refining Company, half owner, were the operators whose well, Sabine Lumber Company 1, NE SE Section 31-8-12, on the outskirts of the town of Zwolle, furnished the week's most important development. It came in with drill stem in the hole with total depth of 2197 feet in marl, flowing at a rate equally as large or possibly larger than Benedum & Trees' Bowman-Hicks A-1, Section 34-8-12. The new well is three miles west of this producer almost on an airline toward the older field.

Sabine Lumber Company 1 had six-inch casing set at 2182 feet, surface elevation being 194.2 feet. The marl has been identified as Midway, the Arkadelphia apparently being entirely absent or extremely thin in eastern Zwolle. The well tends to prove the theory to which H. D. Easton, Shreveport petroleum geologist, who mapped the Zwolle formations in 1922 resulting in discovery of both the older and newer parts of the field, that both areas are part of one pool.

The oil is of the same gravity, 40.4 corrected, and is of the same light blue-green color. It is entirely free of water.

As no tankage had been built, operators closed the gate valve as tightly as possible after the well came in late Tuesday night, February 11, but it made approximately 2000 barrels despite this, most of which was saved in temporary pits. Standard Pipe Line Company completed a four-inch gathering line to the well Friday night, February 14, and the well is now flowing into tanks which were quickly erected. It is still choked.

About eight hours before the Lide and Lion producer came in the Ohio Oil Company's Bowman-Hicks 2, Section 33-8-12, a mile west of Benedum & Trees' producer, had come in from the chalk rock at total depth of 2510 feet, 10 feet in the formation, flowing at the rate of 40 barrels an hour. It is now choked in to 30 barrels an hour due to a shortage of storage, bad roads making it difficult to reach many of the locations in Zwolle. The well is expected to make from 1200 to 1500 barrels daily when opened wide.

Meanwhile Ohio Oil Company has completed Standardization of Bowman-Hicks 1, SE NW Section 35-8-12, three-fourths of a mile northeast of the Benedum & Trees Bowman-Hicks A-1, Section 34-8-12, and pumped 45 barrels for the first 24 hours from 2405 feet.

Apparently the eastern producing area has been extended three-fourths of a mile northwest, as Amerada Petroleum Corporation is swabbing from 17 to 25 barrels daily from Bowman-Hicks 1, SE NE Section 33-8-12, at 2456 feet in chalk rock formation having topped the chalk rock at 2340 feet, set 6⅝-inch casing at 2333 feet, and bailed dry at 2364 feet.

R. L. Gay, Trustee, apparently has added his fifth producer in the western (Blue Lake) part of the area. Bowman-Hicks 6, Section 14-7-14, a north offset to Bowman-Hicks 4, is standing full of oil at total depth of 2513 feet in the chalk rock, and operators are unable to bail it to bottom. It may make a flowing well. Sabine Lumber Company 3, Section 13-7-13, in the same part of the field, has 200 feet of oil in the hole at total depth of 2255 feet, but may be drilled deeper into the chalk rock.

Benedum & Trees are ready to drill plug in Bowman-Hicks A-2 (to be known hereafter as their Bowman-Hicks 2), Section 3-7-12, a half mile south of the 12-mile extension producer formerly Gay's Bowman-Hicks A-1, Section 34-8-12, which will be known as Benedum & Trees' No. 1. Eight and one-fourth-inch casing was set with quick-set cement at 2390 feet with total depth of 2399 feet, surface elevation being 338.45 feet, the highest surface elevation in the Zwolle field. The bit went out of black shale into grey marl at 2379 feet, this being used as a marker, both the shale and marl being in the Midway formation. Operators will use the same tactics in drilling in that Gay used, feeling the way ahead for breaks in the chalk rock formation where oil may be expected.

Benedum & Trees have made three locations offsetting the extension well in three other directions. They are rigging up for Bowman-Hicks 3, NE SW Section 34-8-12, have derrick up for Bowman-Hicks 4, NW SW Section 34-8-12, and have derrick pattern for Bowman-Hicks 5, NE SW Section 34-8-12. Other locations offsetting both the Ohio producers have been tentatively made but have not been staked.

Ruston Drilling Company, after setting 6⅝-inch casing at 2322 feet in Holliday 1, Section 35-8-12, is drilling in at 2437 feet. Warner Quinlan Company, after setting casing at 2170 feet in Peterson 1, Section 26-8-13, is drilling at 2262 feet. The same company is drilling at 2458 feet in Sabine Lumber Company 1, SW NE Section 34-8-12, after setting casing at 2326 feet and bailing dry at 2413 feet.

J. C. Tippett, drilling Hughes 1, Section 36-8-12, for Louisiana Oil Refining Corporation, is coring at 2482 feet after setting at 2406 feet. Haynes Brothers, drilling in with cable tools, are drilling at 2580 feet in Meyer 1, Section 28-8-12, having topped chalk rock formation at 2288 feet and set 6⅝-inch casing at that depth.

Cartersville-Sarepta

The recently revived Cartersville-Sarepta field of Bossier and Webster Parishes, in Louisiana, was not far behind Zwolle in activity during the week, adding three producers, all flowing wells, to bring the total of that area in the 3100-foot oil horizon to seven.

Muslow Oil Company completed Kilgore B-1, NW NW Section 31-23-11, a quarter of a mile west of the same company's Kilgore A-1, NW NE Section 31-23-11, the discovery well of the 3100-foot horizon, flowing 600 barrels from 3146 feet with 14 feet of sand. A half mile west of production in the 3100-foot horizon Louisiana Petroleum Company and H. L. Hunt's Peyton 3, NE SE Section 25-23-12, came in at 3117 feet flowing 950 barrels daily after 6⅝-inch casing was set at 3113 feet. Sunday, February 16, The Texas Company's Peyton 3, SW SW Section 30-23-11, came in at 3147 feet flowing 41 barrels an hour for the first 16 hours.

Arkansas

Marine Oil Company's Thompson A-3, Section 10-18-13, Union County, Arkansas, Urbana district, the deepest oil producer in Arkansas, completed several weeks ago at a contact of the Woodbine with the upper Trinity or possibly in the latter formation, at total depth of 3535 feet, subsequently being deepened to 3539 feet, is dropping off again in production, the gauge of February 12 showing a daily yield of 165 barrels.

The well's first 24-hour gauge at 3535 feet, January 20, showed 425 barrels. The daily yield dropped to 250 barrels January 25 and the well was deepened. On January 28 the yield at the lower level was 260 barrels. On January 31 salt water and basic sediment showed up to the extent of 20 per cent and on February 1 the well swabbed and flowed 360 barrels. The next day the yield shot up to 682 barrels, dropping on February 3 to 455 barrels and spurting again February 4 to 745 barrels, whence it declined to 165 barrels.

One new location in the Urbana district was announced during the week, E. L. Chapman's School District 1, NE SE Section 9-18-13.

News From California Fields

BRAD MILLS, *Staff Representative, Los Angeles, California*

Kettleman Hills Operations Seek Lease Confirmation

COALINGA, California.—Field development at Kettleman Hills has lost much of its spectacular nature, with operators inclined to feel for the Temblor sand with much more precision than would be the case if a shutdown agreement had not been made effective. The principal objective on the North Dome is to make a satisfactory discovery — the chief requirement necessary to receive a lease in lieu of a permit. The recent completion of Petroleum Securities Company's Felix 1 caused quite a disturbance and was expected to be the direct cause of half a dozen offsets, but there is now some doubt concerning the extensive development anticipated a few weeks ago.

As drilling continues, the North Dome looms as the only serious threat. The Middle Dome probably will be productive, but on a much smaller scale than the area to the north. The South Dome has become an extremely questionable factor and may, at the best, produce only gas. The highest pressure, and consequently the greatest accumulation of oil and gas, has been confined to the North Dome, which itself is proving to be considerably smaller than originally thought.

Bolsa Chica Oil Corporation is still worrying with Ferguson 1, a North Dome test located only one mile south of the axis, but the well has shown little life during recent tests. Drilled to 7480 feet and with about 200 feet of sand below the nine-inch shutoff at 7280 feet, failure of the well to flow may eventually be charged to absence of the Temblor sand.

Ohio Oil Company is further testing Smith 1, a South Dome well, not being content to abandon this troublesome hole before giving the sands which showed gas and oil a chance to perform. The hole has been cleaned out to 6960 feet, preparatory to a test above a plug at this point. The well was originally drilled to 8054 feet.

Associated Oil Company is drilling at 5900 feet in Whepley 1, an offset to Petroleum Securities Company's Felix 1, but it will require several weeks to reach the Temblor zone. This well carries a record string of 13⅜-inch pipe, cemented at 5578 feet.

Shell Oil Company has made a location for its first well on Section 36-21-17, the test to be an indirect offset to Petroleum Securities Company's Felix 1. The lease embraces only patented land and is not necessarily bound by the provisions of the agreement now in effect.

Completions at Santa Fe Springs Falling Off

Los Angeles.—Little has been heard regarding development of the 9000-foot Hathaway zone at Santa Fe Springs, following failure of Oscar Howard to get a water shutoff in Hathaway 7 and the general agitation for less drilling in this critical field. Conservation leaders were much perturbed at the discovery of a new zone and expressed the belief that the sand would be exploited at once. The great depth and many problems to be solved in cementing at such a level have served as a check on extensive drilling to the new zone.

Meanwhile, development of the Clarke zone continues and a tapering off of completions is in sight. Edge wells are showing a much lower initial production and several have shown a high cut. Inside completions are also smaller and have a lower gas pressure than earlier completions.

With more than 150 wells drilling for the Clarke zone, a rapid decline should not be expected for several weeks. Curtailment enters the picture and it is difficult to tell just which way the field is headed, pending the outcome of the present wide open test for a new potential.

General Petroleum Corporation, in quest of production from the Hathaway zone, has been unable to get commercial production in No. 213. The well was drilled to 8740 feet.

Rincon Extended

Ventura, California. — General Petroleum Corporation has definitely extended the Rincon field out in the ocean, Ferguson 1, located on an 1800-foot pier, having flowed at the rate of 500 barrels during a water shutoff test of the 13⅜-inch casing at 2540 feet. The well was drilled to 2560 feet, and with only 20 feet of oil sand open is considered a remarkable producer. A very small bean was used during the test as a precaution, and indications were that a much larger flow could have been obtained. A string of 2½-inch tubing was run to 2200 feet. Although not a completion, this well is one of the most important drilled in Ventura County in some time and probably marks the discovery of a very important extension to the older part of the field. Its unique location may act as a barrier to extensive drilling but it will be possible to develop a large production in the ocean if Ferguson 1 proves to be a good well when completed. The hole will be deepened to include the full thickness of the sand if possible. This well was located after an extensive submarine survey by divers and the discovery of the oil sand considerably higher than it is found on the mainland leases proves the accuracy of the geological work. The oil is 27.5 gravity and shows a small cut.

Venice

Los Angeles.—With the City Planning Commission favoring orderly development and permission of the city council already granted, the new Venice field promises to become one of the most active in the Los Angeles basin. Nine permits to drill on restricted property have been approved by the planning commission and all protests filed by property owners denied, these preliminary steps pointing to favorable action of the Los Angeles city council.

Ohio Oil Company, discoverer of the field, recently shut in its first producer, but has started drilling in two additional offsets. It is not so much the intention of the company to develop a large production for immediate market as to ascertain the probable extent of the producing sand.

Union Oil Company has actively entered the field, having acquired leases on a 485-acre tract from Del Rey Company and about 170 acres belonging to the Vidor interests. A location has been made near the northern corner of the Del Rey property and drilling will start immediately.

Midway

Bakersfield, California. — Standard Oil Company is drilling at 8925 feet in Mascot 1, a deep test in the Midway district, the formation running to brown shale and streaks of hard sand. Occasionally gas showings are considered especially important and make the discovery of a light oil bearing sand possible. This is the deepest well ever drilled outside the Los Angeles basin.

Richfield

Los Angeles.—A six-acre tract lying in the eastern part of the Richfield field has been taken back by the original fee owner, D. A. Soderberg. This lease is a direct offset to the tract held by Weber and O'Brien, who recently tested a new deep sand discovered below 5000 feet. The Soderberg lease has one well pro-

ducing from the 3200-foot sand and is in good condition for deepening, having a 10-inch water string over the producing sand. The Weber and O'Brien well is reported to have cut several bodies of oil sand between 4500 feet and 5200 feet.

San Joaquin Valley

Fresno, California.—Leasing activity in the vast level San Joaquin Valley continues, with several large oil companies adding to their extensive holdings. George F. Getty has made a location on the northeast quarter of Section 8-10-14, the test being located on a block of about 30,000 acres.

Ventura Avenue

Ventura, California.—Prairie Oil & Gas Company, a comparatively new entry into California, has leased about 7000 acres lying east of the Ventura Avenue field and will immediately start operations on the vast tract. The leases include the Sexton ranch and lands formerly belonging to the South Basin Oil Company and Lloyd interests. Prairie Oil & Gas Company will survey an old hole which was drilled to around 4000 feet and deepen it if found in good condition.

International Oil Field Is Due Intensive Drilling

Great Falls, Mont.—Most interesting territory this winter in the entire Rocky Mountain region is perhaps the new international boundary field recently discovered in northern Montana and southern Alberta, which is variously known as Buckley field, Red Coulee and Blarney Castle dome. There have been three commercial wells completed in this district. Oil is found in the Ellis sand in the first two wells completed, and in the last one, Cosmos Petroleum Company's Thacker 1, it was found 70 feet above the Ellis, and is to be drilled in. The discovery well is Vanalta Oil Company's No. 1, and the second is Mid-Continent Oil Company's well on the American side, good for 100 barrels per day. The new Cosmos well is good for at least 300 barrels per day, along with considerable water, in the Sunburst sand topped at 2408 feet.

By June 1 it is believed that at least 50 strings of tools will be working in the new field, which has all the earmarks of a highly productive and extensive pool—one capable of yielding large wells at comparatively shallow and inexpensive drilling depths. Work in winter will be hampered somewhat by weather conditions.

The boom on the border was started last September when in a stray sand between the Sunburst and the Ellis the discovery well came in as a commercial producer following a strike of gas measuring 3,500,000 cubic feet. This gas is now running through a two-mile pipe line, supplying other wells in the field. Mid-Continent Oil Company's well lies just south of the Vanalta discovery, and off-sets it.

California Oil Leaders Take Public Into Confidence

(Continued from page 30)

While the enforcement of this law is being held up by a few operators, gas waste is running around 800 million cubic feet daily and the state losing one of its most valuable natural resources.

In making the foregoing statement, Boggs announced that his intention was to impress upon the minds of the people of Southern California the need of cooperation between the general public and the oil companies.

Companies representing about 85 per cent of the state's refining capacity have agreed to reduce refinery runs by at least 75,000 barrels. This action came as the result of a much weaker gasoline market. Runs to stills dropped sharply when the curtailment program was placed in effect last November, but are still considered far too high for current demands.

Curtailment will be applied to Round Mountain, Mt. Poso and Kern Front when percentage of cuts are agreed upon by the various committees. There is a very limited market for this heavy oil and a complete shut-in would be an economical step, according to leading oil men. For low gravity fields, Kern Front and Mt. Poso are unusually prolific.

The new state-wide curtailment movement has temporarily overshadowed efforts to reach a new agreement at Kettleman Hills, where an increased flow of extremely light oil is threatened. Landowners are organizing to fight what they term "over curtailment" and are not expected to yield to any plan which will not permit development of patented land on at least an orderly scale.

Developments on the North Dome do not indicate that the field could throw the industry out of balance in short order, although a much larger production could be marketed during the remainder of the year. The oil is above 60 gravity and the mere thought of a flood of such light crude has thrown the industry in a tremor.

The original agreement is regarded as a thing of the past by some operators, but there is no apparent reason why major companies should completely lose their heads and start an extensive offsetting campaign because one 1600-barrel well was placed on production. The agreement stated, however, that when an operator was offset and his lease was being drained he had a right to place his well on production also.

A new committee was appointed at a recent meeting of Kettleman Hills operators and work has been started on a new plan of orderly development. This committee will formulate a program and submit it to operators for the latter's approval. The unit and cooperative plans of development are being considered, but a combination of both may eventually be adopted. Members of the committee are W. H. Berg, Standard Oil Company; J. H. Jenkins, Associated Oil Company; William Reinhardt, Shell Oil Company; Rush H. Blodgett, Getty Oil Company; R. C. Sperry, General Petroleum Corporation; Roy E. Collom, Continental Oil Company; William C. McDuffie, Pacific Western Oil Company; P. M. Longan, Milham Exploration Company; Carl H. Beal, representing permittees at large; William Pemberton, Petroleum Securities Company; Robert C. Patterson, United States Geological Survey, and Henry Hawson, representing the Independent Landowners League.

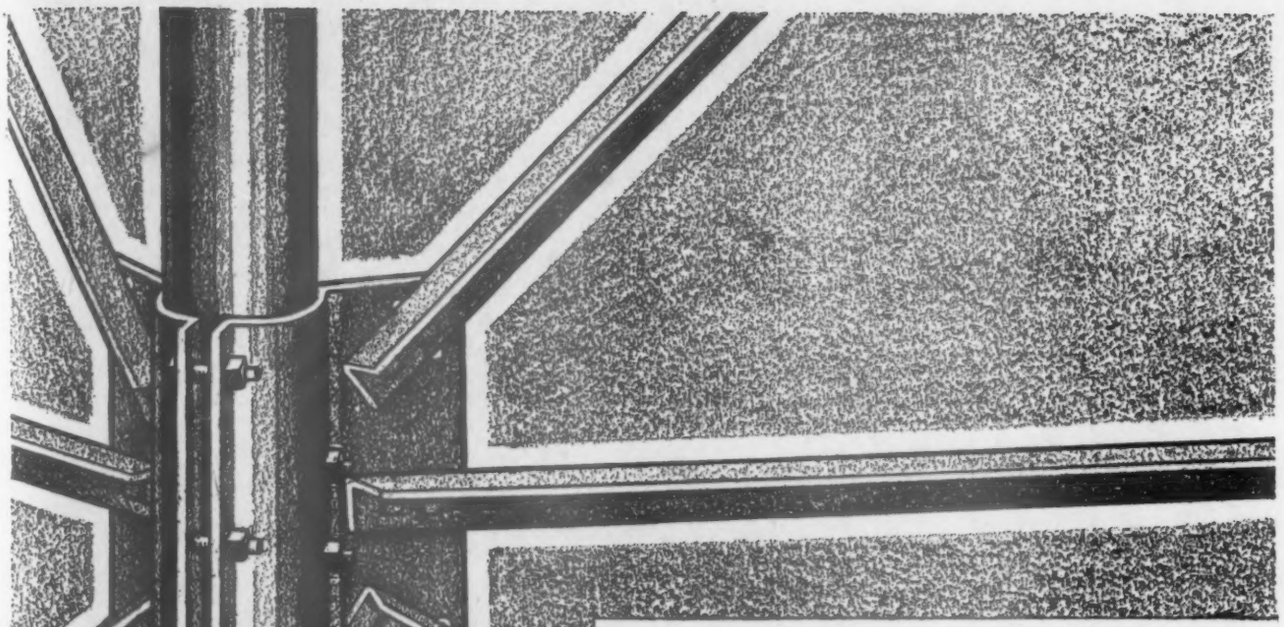
Mid-Continent operators are still keeping a watchful eye on California, hoping that more stringent curtailment measures will be applied. California products are being shipped through the Panama Canal at a rate considered too high by other territories, but regarded as necessary by the Western state. The solution to the problem is to reduce the crude output and refinery runs and export shipments will care for themselves. The Mid-Continent fears an increased production in California, while California fears that the Mid-Continent will get mad and cut loose a flood of crude and refined products which will beat California at her own game.

Associated Employes Buy Company Stock

San Francisco. — According to a statement issued by C. R. Brown, assistant to the president of Associated Oil Company, 3614 employees of the company have to date elected to participate in the stock purchase plan recently inauguarted by Tide Water Associated Oil Company for the benefit of employees of Associated Oil Company and Tide Water Oil Company. This represents 88 per cent of employees in the service of the company one year or more and, therefore, eligible to participate in the plan.

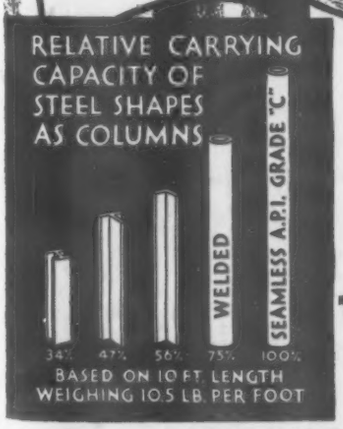
Terms of the plan provide that the price at which Tide Water Associated Oil Company common stock is to be acquired shall be fixed at $10.00 per share for the year 1930, and for each of the remaining two years of the plan the price will be fixed on a basis not less than $10 per share nor more than two-thirds of the average market price for a given period. Payments for stock are to be made through the medium of payroll deductions.

Los Angeles. — The Hermosa city council has granted a permit to the California-Ventura Oil Company to drill for oil within the city limits, work to start at once. The location is roughly in line with the Venice and Torrance fields and was made as the result of the recent discovery in the former.



TUBULAR LEGS

OF COURSE



RELY ON MOORE LEG STRENGTH..

Assure yourself of dependable derrick service by relying on the extra strength of Moore Champion tubular legs. They are of 40-50 carbon, seamless steel—galvanized inside and outside.

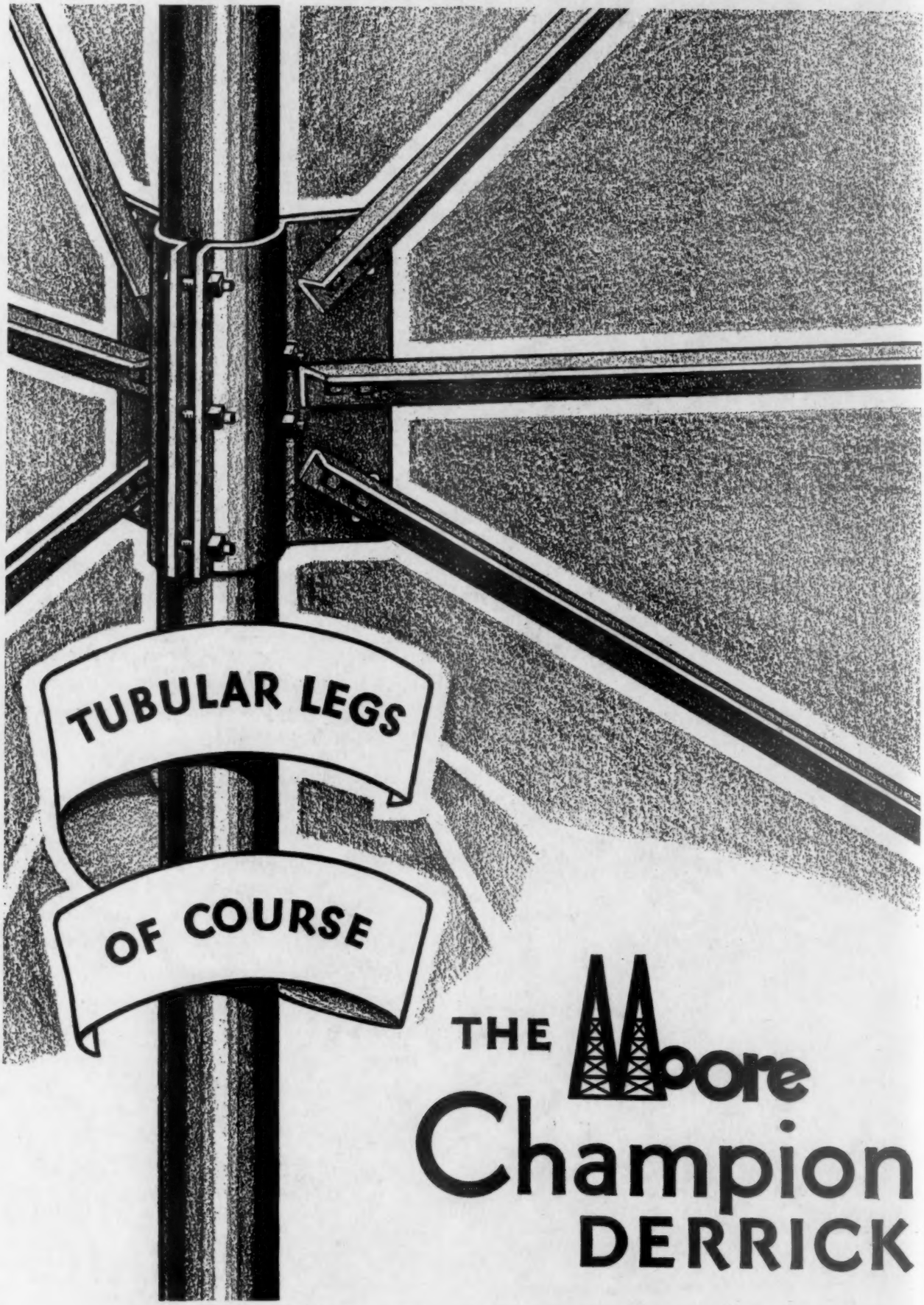
STRONG CONNECTIONS . .

The Moore Clamp is the key to the efficient use of tubular legs. Leg sections, which are positively aligned at their joints, are connected with a vise-like grip by this clamp. Bolts through the clamping flanges tighten the clamp on the leg sections, and through-bolts prevent the sections from being pulled out. By means of automatic welding, the Moore clamp is made from rolled steel plates into a single rigid unit. Its high efficiency has been demonstrated by tests and by field service.

THE Moore Champion DERRICK

Moore ALL STEEL RIG EQUIPMENT

LEE C. MOORE AND COMPANY, INC.
PITTSBURGH Established 1907 TULSA
New York Offices
Oilfield Equipment Co., 30 Church Street, New York, N. Y.
DALLAS, TEXAS WICHITA, KANSAS CASPER, WYO.
SHREVEPORT, LA. HOUSTON, TEXAS
Stocks in All Principal Fields



THE Moore
Champion
DERRICK

Does Florida Promise Oil?

(*Continued from page* 34)

The recoveries from the Fort Norman tests 1500 miles north of railhead in Canada, verify facts otherwise already known about regions of deep water in that territory.

The foregoing graph is drawn for cognate purposes:

The Florida province expresses direct relationship with the regions described as to (a) water temperature, (b) climatic conditions, (c) marine organizms, animal vegetable, (d) identity of sediments in type, (e) similarity of food supply and land derived material for the multiplicity of marine life.

The Judith River, Eagle and Pierre in Montana; the Pierre and Lewis in North and South Dakota, Colorado and Wyoming, are in the Ripley-Selma stages in Florida. The Colorado in Montana, the Niobrara in Dakota, the Frontier in Wyoming, the Niobarara and Benton in Colorado, occupy the Selma-Eutaw stages in Florida.

The Dakota in Montana, North and South Dakota, Wyoming, Colorado, Western Oklahoma, occupies the place in the Time Scale and Water Stage of the Tuscaloosa in Southern Alabama and Florida. It is the equivalent of the Woodbine in Texas and Louisiana.

An unconsolidated sand found in the test 10 miles south of Tallahassee, one on Plate II, drilled to 3735 feet, and a similar sand encountered at 4010 feet in the Cedar Key test, now completing, two on the above Plate, exhibit all of the chief characteristics of the Texas and Louisiana Woodbine; in physical comparison their marine quality rounded shape of grains, quartz termination, cyrstalline composition, minute foreign inclusions, have no definite differentiation. The immediate succeeding sediments over the sand were a shaley slate, followed by the thick deposits of shale of Eutaw (Benton-Dakota series) determination.

Sources and Variations of the Sedimentary Stages

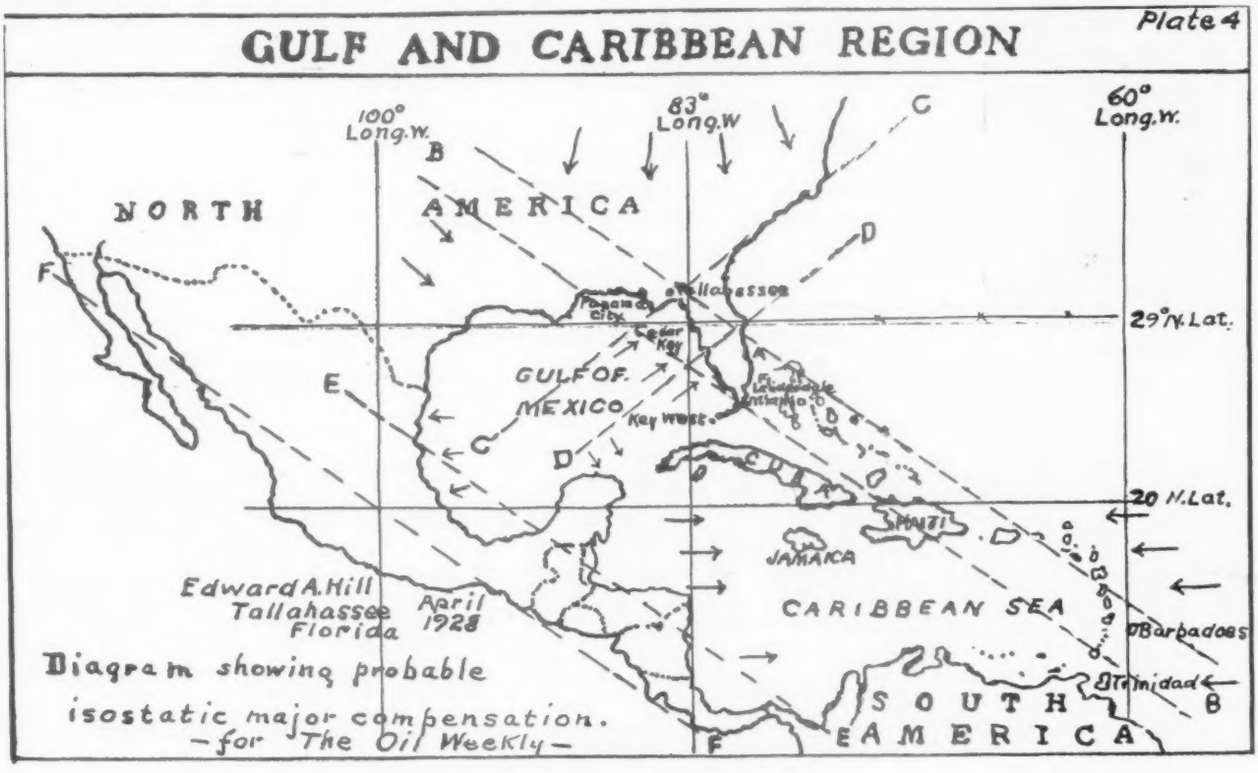
It will be known that the present Gulf of Mexico represents but a meager remnant of the Middle and Upper Cretaceous encroachment. Also an equal fact is pretty well established, that, there were various regions embracing land masses which were involved in earth movements — *the Mid-Laramide, Dana — Suess.* The recession of the surface which provided overflow of the gulf which begun in Benton epochs made somewhat near an east-west shore line from the Atlantic Ocean corners of Georgia and Florida to Denison, Texas; thence southwestward the surf extended to San Antonio (these are approximate bounds only); and upon the south line the landed region lying beyond limited the seas to a northerly shore-line running north 50 degrees east from a point near Tampico, Mexico, to and across the southerly tip of Florida, including the Antilles in the land mass.

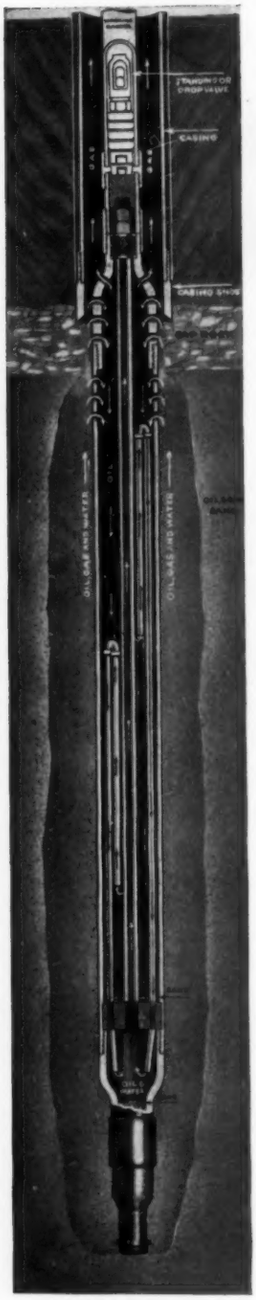
Hence, there were accumulations of land derived material in the sea from the north and from the south; the animal and vegetable organisms were similar, in many cases identical; the temperature of the water, the climatic conditions landward in each direction, the slow recession of the regions undergoing submergence; together with other factors with respect to which we are not sufficiently acquainted, governed the character and quantity of food supply for the living things which infested the sea.

Formation recoveries by drilling throughout the past 30 years has developed with a reasonable degree of assurance a more or less dependable knowledge of the paleogeography of the general regions reviewed above; except, that it be reserved to say that, the southern landed region referred to can not be fully established as regards its certain northern and western boundary.

Parallel facts relating to other portions of that sea which joined the gulf and the Arctic may be pointed out: into waters of approximately equal temperature with that just discussed, indeed, constituting greater reaches of the same sea, land derived wastage came from the eastward and westward into an expanse of waters 500 to 1000 miles in width by 3500 miles long; originating upon factors of land area, climate, and qualifying environments generally similar, if not largely identical, to the Florida province.

But with the dawn of the Pierre epoch there was a recession of the southeastern portion of North America not only, but the Antillean-Yucatan region also underwent negative movement, as to its east-





Fully Patented
June 12, 1928—No. 1673663
Oct. 22, 1929—No. 173249

The Chancellor Separator

A POSITIVE GAS ANCHOR
CUT OIL PREVENTOR
A DOUBLE SANDTRAP

The Chancellor Separator is designed to separate the Gas, Sand and Water from the oil at the bottom of the well. Used below the working barrel at the bottom of the hole, it prevents gas troubles, because it is a positive gas anchor. Completely stops the pumping of gas.

Prevents Cut Oil, by keeping the gas out of the tubing, and pumping the water separate from the oil by use of the siphon tubes. First a head of water then a head of oil is pumped through the tubing, keeping worn barrel, cut cups, and valves from emulsifying oil and water. This eliminates the treating of oil and increases the casinghead gas.

There are no working parts to wear out. Closed on top, cavings cannot clog the Separator, absolutely guaranteed in every way—it will pay for itself before you are invoiced. This is the result of years of experimenting. Now being used by most of the larger Oil Companies.

Manufactured in lengths of 8 feet to 12 feet, with an outside diameter of 4¼". Special sizes are made to order. We welcome your inquiries.

Send for fully descriptive folder giving full details of this remarkable new member of the Miller family.

MILLER
Combination Bailer & Pump Co.

General Office and Plant
SAPULPA, OKLAHOMA
U. S. A.

ward end, emphatically. The great Mississippi embayment developed and Gulf waters received sediments as far northward as Egypt (so-called by the residents of southern Illinois, where the designation is in some sense appropriate).

The next succeeding period, the Tertiary, had fairly full development. Coeval with the ending epochs of the Upper Cretaceous the deliberate elevating of the sea floor supplied the beds which we know as the Ripley, and the following undifferentiated epi-Mesozoic. This last is almost certainly the opening stages of the Eocene Tertiary as well; but so far no conclusively identifying proof of the assumption has been supplied so far as this writer knows—in Georgia and Alabama, yes; but in Florida the first certainly placed cast is in the Selma; in Louisiana the Annona, northwestward the Niobrara, etc.

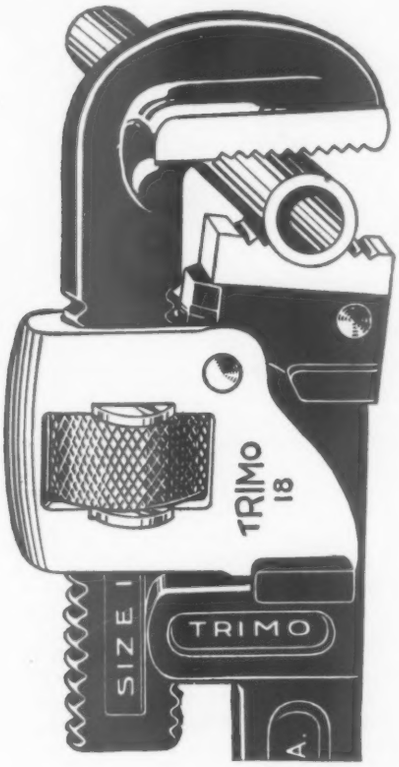
Rock Section in Portions of Florida

Drill cuttings have indicated about the following rock section co-existent throughout an elongated region roughly defined along and somewhat adjacent to the Gulf coast: for the western margin begin at the northern boundary of the state where latitude 31 north crosses longitude 86 west, and pass southward virtually in a direct course toward Key West—nearly all of that western limit traverses the Gulf. For the eastern boundary of the region begin on the same degree of latitude at the crossing of longitude 84 west, and pass southeastward to the Atlantic Ocean at the northeast corner of Broward County.

The foregoing includes a territory 100 miles across by upward of 300 miles long northwest-southeast. The Levy County coast is 30 miles west of the eastern limits of the region, and it lies somewhat north of the center of the territory, northwest-southeast. It is designated here by reason of the fact that it represents the central portion of an area from which a considerable part of the later Ocala (Eocene Tertiary) has been denuded by erosional activities.

Northwestward and southeastward from the center mentioned it has been found that the Eocene Ocala lime is inclined, dipping more rapidly southeastward, though at lessened pitch northwestward. Indeed, in the latter direction there are areas here and there where it is near or at the surface; notably, it is the top rock near the northern line of the state, and is at depths below the surface varying from 10 to 60 feet at several other places. By some investigator it has been variously adopted as a key horizon in geological surveys. Toward the southerly extremity of the defined region it is believed to approximate a level 700 to 1000 feet below the surface.

A well drilled for water by the East Coast Railway Company at Marathon, 80 miles south of Miami, uncovered fossils which show identical forms found in the Canal Zone, Cuba and the Leeward Islands; hence, furnishing additional evidence of the old land mass mentioned in an earlier paragraph. Nothing was found in the well which agreed with the paleon-



Better and Better

—a tool that has constantly gone forward in performance and popularity

Two generations of constant mechanical improvement and invention have not displaced the need for the pipe wrench. But they have opened the way for improved manufacture and stronger, longer lasting tools.

TRIMO has always been a good wrench. Today it is a better wrench.

Modern methods enable us to drop forge the handle, and heat treat it for extra toughness.

Our manufacturing methods are backed up by forty years of valuable experience. Your choice of a TRIMO is backed up by forty years of constantly growing popularity.

TRIMO Pipe Wrench

All Steel for Strength - - - - Handle Drop Forged—Not Cast

Made by TRIMONT MFG. CO., Inc., Roxbury (Boston), Mass.

tology northward throughout the state. (See list of wells.)

The depth through the late covering, the Tertiary and (possible) epi-Mesozoic, to the latest sediments of the Upper Cretaceous, is from about 1600 feet in the more elevated Cretaceous rocks, to 2300 feet in areas where they are occupying a normal position, and where the consequent later deposits are thicker—this has more particular reference to the bounded region described. However, it should not be thought that other portions of the state do not in reasonable degree express somewhat nearly parallel vertical sections. At one known location the Cretaceous has shown a thickness of upward of 1600 feet.

Earlier Eocene and Cretaceous Formations Organic

From three test wells in Florida the writer has examined natural crude petroleum recovered in small quantities under normal earth conditions. From several others inclusive of the three mentioned, he has encountered an abundance of bituminous rocks, and carbonization.

It has been ascertained by him that the metamorphoses have been favorable rather than inhibitive of oil genesis, granting that what is now surmised regarding the origin of oil embraces much of fact. The alterations obtaining in the sediments have not been in the direction of silicification; crystallization approaching the degree of hazard is not present. There obtains adequate evidence of shale decomposition to the end that generation of liquid hydrocarbons from contained organisms would have resulted; destructive distillation affecting thick bodies of limestone has provided testimony of its processes; salt water of as heavy solution as has been developed in any of the productive territories has been found in the permeable horizons of the later Cretaceous.

Algae, diatoms and other plant life, floating and attached, were plentiful; their growth and survival were enormously prolific. Foraminifera, radiolaria, microscopic animal organisms, mollusca, fish and other life types, were all generally abundant; they were more numerous in warm waters than in cold, more populous in the seas near shore than in depths far from land; they were usually of meager life span but were of continuous survival and rapid of multiplication.

In the plant life carbohydrates were more in evidence; in the animals proteins were more abundant. It is believed that from them, their alterations, derivatives and compounds natural processes generated and distilled in the earth's gas mixing, chemical and bacterial laboratories, the liquid crude petroleum which constitutes our commercial supplies. There has not so far developed adequate reasons for denying to Florida a favorable hearing, as based upon the organic character of the sediments in her sub-surface rocks.

Earth Movements Rightly Timed

Holding to our ideas of oil genesis from entombed organic material in the sediments, the succeeding factor would comprehend the series of earth movements which affected the stratified rocks.

1. If the basement of the state is composed of Carboniferous and sub-Carboniferous formations, and if it be that oil is produced from and migrates out of such sediments; then, the throes of the Permian Revolution would have affected the organic inclusions as it manifestly changed them in other similar territories now of prolific output. The later phases of the Laramide Revolution with its epochs of varying intensity and long duration, was rightly timed and sufficiently extensive in scope to have enforced dynamic stresses and diastrophic action upon the deposits to have made oil not only; but to have so deformed the beds as to thrust them out of horizontal planes, and to be effective in their displacement in ample measure to have erected arch, dome, anticline, and other forms of structure, fitted for the operation of natural gathering mechanics.

It is thought by this writer that the fluctuating and inconstant shorelines during the Eocene epoch, the alternating subsidence and lifting of the Gulf basin, the

List of Test Wells Drilled in Florida

County	Town	Date	Reported depth	Remarks (as Reported)
Escambia	Cantonment	1905-8	800 ft.	Miocene—for water
Escambia	Pensacola	1900-02	1607 ft.	Oligocene—hot water
Walton	Rat Head	1920-21	770 ft.	Eocene at 730 feet
Walton	Bruce	1920-21	1888 ft.	Ocala—Eocene 880?
Washington	Chipley	1919-21	4912 ft.	Show oil and gas
Calhoun	Clarksville	1919-20	1320 ft.	Ocala (?) 326 feet
Gadsden	Greensboro	1911-12	1738 ft.	Ocala (?) 455 feet
Wakulla	Burns	1916-20	2169 ft.	Show of oil
Leon	Woodville	1920-23	3735 ft.	Good show of oil
Suwannee	Live Oak	1922	650 ft.	Ocala at 220 feet
Marion	Anthony	1908	500 ft.	Ocala surface rock
Sumter	Bushnell	1917-18	3090 ft.	Show of oil and gas
Duval	Jacksonville	1923	1700 ft.	For water, Ocala 500
Nassau	Callahan	....	.....	Water—Ocala at 500
Nassau	Fernandina	....	.....	Water—same
Brevard	Melbourne	....	.....	Water—Ocala at 200
Volusia	New Smyrna	....	.....	Water—Ocala at 90
Volusia	Daytona	....	.....	Water—same
Lake	Eustis	....	.....	Water—Ocala at 140
Seminole	Sanford	....	.....	Water—Ocala at 115
Orange	Apopka	....	.....	Water—Ocala at 100
Osceola	Kissimme	1914-17	2000 ft.	Salt water 1925
Polk	Frostproof	1926	?	Nothing known
Polk	Polk City	1923-25	3290 ft.	Eocene 100—show oil
Polk	Auberndale	1922-23	752 ft.	For phosphate
Polk	Lakeland	1921	753 ft.	For ice plant
Glades	Okeechobee	1924-26	2683 ?	Ocala at 610 (?)
Hillsborough	Oldsmar	1921-23	3255 ft.	Show of oil and gas
Manitee	Palmetto	1924-26	2645 ft.	Trace of oil
Lee	South East Ft. Myers	1920-21	.....	Show oil and gas at 2191
Lee	South East Ft. Myers	1920-21	.....	Shows at 1150-2125
Monroe	Marathon	1917-18	2555 ft.	For water—text
Levy	Cedar Key	1926-30	4010 ft.	Gas at 4010
Polk	Bartow	1927-28	4543 ft.	Heavy water flow
35-Sarasota	Nokomis	1927	1315 ft.	Heavy water flow
36-Marion	Fairfield	1927-28	4515 ft.	Trace oil 4500
37-Marion	York	1926-28	6134 ft.	Shows of oil
38-Jefferson	Monticello	1926-29	3838 ft.	Traces of oil
39-Monroe	Tamiami Trail	1927-29	3230 ft.	Shows reported

(Note: According to results of careful geophysical check-up it appears that not more than four of the tests listed were located in such structural position as would have warranted the expectation of successful results).

"For every joint on every line"

Why not save for dividends the gas, oil and water that leak from pipe lines—with 100% leak-proof Victaulic Couplings? Installation costs are low.

• • •

Mail the Coupon for Victaulic Bulletin

For all sizes of steel, wrought iron, cast iron and spiral weld pipe—any pressure. Mail the coupon for detailed information.

VICTAULIC COMPANY OF AMERICA
26 Broadway New York

"For every joint on every line"

FLEXIBLE LEAK-PROOF

VICTAULIC

REG. U. S. PAT. OFF.

PIPE COUPLINGS

VICTAULIC DISTRIBUTORS

Mid Continent and Rocky Mountains
HANLON-WATERS, INC.
Tulsa, Oklahoma

Pacific Coast
DUCOMMUN CORPORATION
Los Angeles and
San Francisco, California

Western Pennsylvania
PITTSBURGH SUPPLY COMPANY
Pittsburgh, Pennsylvania

Illinois, Indiana
BELL and GOSSETT
Chicago, Illinois

Ohio
CASE HARDENING SERVICE CO.
Cleveland, Ohio

Minnesota, Wisconsin, Iowa
F. S. VAN BERGEN
Minneapolis, Minnesota

Canada
D. B. McWILLIAMS
Toronto, Canada

West Virginia and Kentucky
THE McJUNKIN SUPPLY CO.
Charleston, West Virginia

FOR CRUDE OIL GAS WATER SEWAGE COMPRESSED AIR ETC.

For uses, installations, specifications and prices, fill in and mail this coupon.

VICTAULIC COMPANY OF AMERICA
26 Broadway New York

Please send me Victaulic Bulletin No. 8

Name.....

Address.....

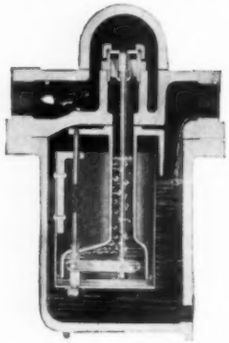
Athey
TRUSS WHEEL

OIL FIELD WAGONS

ATHEYS are all steel general utility wagons for use behind tractors, either singly or in train. Carry maximum 10-ton loads under all operating conditions. They are the modern, economical means for hauling heavy loads. Made in 10, 15 and 20-ton capacities. . . . Write for complete information.

ATHEY TRUSS WHEEL CO.
139 N. Wells St., Chicago, U.S.A.
Cable Address: "Trusswhel," Chicago
The Baldwin Locomotive Works, Foreign Representatives, Philadelphia, Pa.

WRIGHT-AUSTIN



"AIRXPEL"

Bucket Type Steam Traps.

For high or low pressures. Simple, sturdy construction; all parts accessible; large capacity; small and light in weight.

Write or phone for catalog.

MAINTENANCE ENGINEERING CORP.
P. O. Box 1402 Preston 2274 LD-409
HOUSTON, TEXAS

advancing and receding strand in answer to the movemets, points toward isostatic restoration of equilibrium co-extensive with the Caribbean, Isthmian and Antillean regions. (Plate 4.) The Florida province could not escape the widespread movements. Nor was it free from uneasiness owing to the vulcanism, the folding and faulting, resulting from intensive disturbance during Miocene times; nor was there quiescence at the ending stages of the Pliocene, or during the extensive action which persisted in the Caribbean into Pleistocene times—evidence of these things is abundantly present.

Items of Interest in the Study of Drill Cuttings

More or less achieved information was available from an experience in nearly all American oil fields covering an active life of 35 years of personal field work and research. It will be allowed of course that the writer had access to a reasonable range of the recorded knowledge of authorities whom he feels it a privilege to honor; also there were before him the results of analyses and tests of learned scientists whose works were inclusive of every variety of formation, from every obtainable depth, from every possible source, under every conceivable natural condition.

To rightly determine what specific formations indicate it has been found needful to try to know as much as possible of the following: from whence and from what material were the sediments derived; were they deposited near shore or far from it; in deep water or shallow; was the water still or disturbed, if disturbed was that condition continuous or interrupted; was the uneasiness seasonable or uniform, at short intervals or long; if in deep water was it at times shallow, and if so if that condition prevailed for long periods or short; if the cause was to be looked for in the movement of related regions, and were such regions dry land or sea beds; were the deposits put down rapidly or slowly, in salt water or fresh; were there other forms of mineralization present in the water and if so what were they; were the sediments delivered to the sea by rivers, or were they of lacustrine, fluviatile or marine in type; was the water hot, warm of cold; if the deposits were of lime content, what proportion did it represent to the whole mass; if it was a primary organic lime, or of secondary character—eroded from and transported away from an original deposit; if a sand, was it of a quartz terminal, metamorphosed lime, shist, marble, volcanic, crystalline or massive, consolidated or loose of bedding; were the sediments free from or inclusive of carbonaceous matter, bitumen, gypsum, sulphur, bentonite, soda, salt, or any one or more of various minerals; were they oxide or sulphate, etc.; almost ad infinitum.

A serious effort has been made to reach a responsible judgment regarding such factors as relating to well recoveries in the state of Florida. None can more deeply appreciate, or more freely admit, the almost hopeless attempt to achieve an entirely dependable mass of data which include a great part of the necessary knowledge embraced in an accurate encompassment of the foregoing catalogue. And, though fully cognizant of the hazards attending pioneer drilling, taught by long experience to discount while trying to properly apprise the possibilities of every unproved region, he is emphatic in the statement that, Florida does offer real promise of oil output.

It may not be thought out of place for us to be reminded that, when in 1909-10 the favorable report covering the Electra area in Texas, was released by this writer after exhaustive investigation, but a scant few were ready to agree with the judgment. In 1910 Hivick drilled the discovery well of a prolific field there.

During 1911-12 intensive study was given by personal field research to the general Healdton, Oklahoma, region. A report, suggested vertical section, and a location for drilling test well, were prepared by the writer; many efforts were made to inspire someone of the Kansas and Oklahoma drillers to undertake the test, but without avail. At length the location was drilled and the Healdton field was opened.

There were almost none whomsoever that would admit the promise of the Marathon Fold, when in May, 1919, this writer completed his report, map of the disturbed region, with suggested locations for drilling. But tests were at length made on the Coleman ranch in Mitchell County by Vaughan of New York, and the original findings were amply verified by the drills.

Though these are matters of personal import, they also constitute authentic history; and they are parallel with similar facts resident in the earlier days of Robinson, Illinois; Morris, Oklahoma; Greenwood County, Kansas; Osage, Wyoming; Cat Creek, Montana, and in the San Joaquin Valley, California.

So, it may be repeated, one should not too readily and unwittingly discredit Florida because a few, a very few, test wells have been drilled, none of them showing evidence of commercial supplies. Very little in agreement with the locations of many of the holes so far drilled can be found by the writer.

Tulsa. — The Keys Drilling Company and the United Drilling Company have spudded a test in the NE SW Section 35-4n-13w, in Franklin County, Southern Nebraska. The well is drilling ahead after setting surface pipe.

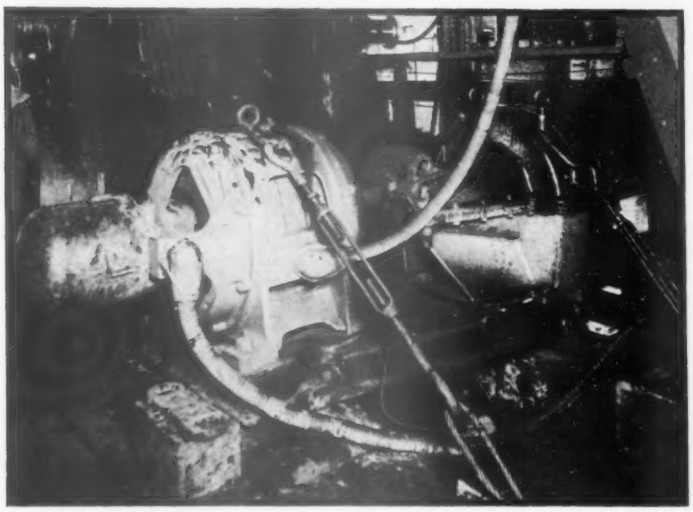
It is located near a hole recently drilled to 3260 feet, and which had several showings of oil, but was lost on account of continued water encroachment.

A number of major oil companies are doing extensive core drilling in Southern Nebraska, and additional locations are expected to be announced soon. Approximately 85 per cent of Webster County is under lease, principally by the larger companies. The Texas Company, Shell Petroleum Corporation, Ohio Oil Company and Rycade Oil Corporation are the principal users of the core-drill in the vicinity.

EVERYTHING ELECTRICAL FOR THE OIL FIELD

an IMPROVED DRIVE

for single motor rotary drilling



A Westinghouse-Nuttall drive. The 125-hp. gas protected rotary drilling motor is being driven through an OP-5 gear.

BETTER drilling conditions and more dependable operation result from using the Westinghouse single-motor drive on the draw works.

This modern driving unit consists of the efficient, sturdily-built Westinghouse-Nuttall OP-5 reduction gear, a Westinghouse single-speed drilling motor, and control by which the necessary variations in speed are obtained.

Both motor and gear unit are assembled on the same base, forming a self-contained, compact drive that is easy to install and transport and occupies but little space.

Westinghouse OP-5 units can be used with 75, 100 and 125-hp. motors. The durable, heat-treated gears and shafts and the sturdy, totally enclosed case of these units provide strength to withstand the most severe service.

SOLD BY

OIL WELL SUPPLY COMPANY and **THE NATIONAL SUPPLY COMPANIES**

Westinghouse

T 30743-B

Let Their Record Speak

If you keep records on your valves you know that Ludlow Valves are dependable—and that they give extra long service under the hardest usage, with attention and maintenance nil.

LUDLOW VALVES

ALL SIZES AND PRESSURES

HAND CYLINDER AND ELECTRIC OPERATED

IRON BODY
BRONZE MOUNTED
ALL IRON
CAST IRON
FOR
REFINERY

Distributed by

MID-CONTINENT SUPPLY CO.
Houston Fort Worth

LUDLOW VALVE MANUFACTURING CO.

TROY, NEW YORK

Kansas City Chicago New York Boston

TYLER BOILER TUBES

O. H. Steel Boiler Tubes
Armco Ingot Iron Boiler Tubes
Cop-R-Loy Boiler Tubes

Request full details

THE TYLER TUBE & PIPE CO.
WASHINGTON, PA.

Warehouse Stocks

Harrisburg Pipe and Pipe Bending Co., Houston, Texas.
A. M. Castle & Co., Chicago, Seattle, Washington, San Francisco, Cal.; Los Angeles, Cal.
Harrisburg Supply Company, Tulsa, Oklahoma.
Lukens Steel Company, New Orleans, La.

ARMCO IRON LINE PIPE and OIL WELL TUBING

FIELD RIVETED

TANKS

Tanks of standard designs and capacities are carried in stock at both Pittsburgh-Des Moines shops—in Pittsburgh and in Des Moines. These are completely fabricated and ready for immediate shipment. Write for prices to the office nearest you.

Special tanks of any size, for any purpose will be quickly designed, fabricated and erected to meet unusual requirements.

Pittsburgh-Des Moines Steel Company
87 Neville Island, Pittsburgh, Pa.
1299 Praetorian Bldg., Dallas, Texas
Des Moines—New York—Chicago
Seattle—San Francisco—Atlanta

Civic Organizations Indorse Oil Tariff Move

By WARREN BAKER
Staff Representative

TULSA.—With the first skirmish of their fight for a tariff on crude oil over, most of the oil men from the Mid-Continent who made the trip to Washington a couple of weeks ago, are back home, but in their words, "The oil tariff fight is going on."

Those remaining in Washington, now aided by new reserves that have recently arrived, continue to interview senators in an effort to obtain a favorable senate vote on a tariff for crude oil. Wirt Franklin, president of the Independent Petroleum Association of America, spent some time in New York last week doing missionary work, but has returned to Washington to direct the activities of the delegates there.

Indications are that the tariff advocates are still lacking some votes in the senate. A total of 48 votes are necessary in the senate today, since two senators are abroad attending the London naval conference. It appears rather doubtful, but not hopeless, that the necessary votes will be secured this time, but the oil men are continuing work and telegrams continue to arrive in the capitol city in large numbers from various organizations over the United States pledging their support to the cause.

The next big important moment in the tariff fight, and the most important one yet, reached, will come soon—when the senate finance committee reaches the free list in the 1929 tariff bill. When this time arrives another large delegation of independent oil men is expected to be present in Washington.

Opponents of the tariff were said to be wiring senators and some senators thought to have been for a tariff on crude oil last week are now said to be undecided. Opponents continue to appear rather nonchalant about the whole question.

A thing favoring the independents is the changing policy that is taking place in congress. Heretofore, the old practice would have made it necessary to await a number of years before bringing the matter to congress again, if it fails, but this is being discarded by a slow process, whereby an industry may at any time place its appeals for aid before congress without waiting for a tariff bill to be taken up and congress can be expected to answer the question. This will enable the independent to keep hammering away on the problem every year, should they fail.

Perfecting Organization in Mid-Continent

Those who returned to Tulsa, Fort Worth, Wichita, Oklahoma City and other points in the Mid-Continent oil region are continuing their work. Although considerably more optimistic than when they embarked for Washington, they have not lost sight of the fact that they have much to accomplish and are attacking the tasks ahead of them with the same dogged determination that fired their work in Washington.

They are being bolstered by the fact that virtually every civic organization in Oklahoma and various similar organizations in other states have indorsed the independent oil men's fight for a crude oil tariff. Many of these organizations have sent wires to congressmen and senators as well as to the Independent Petroleum Association of America.

Tulsa is especially strong behind the fight, including merchants as well as the oil man. The chamber of commerce has indorsed it and made it a part of its platform for 1930. The junior chamber of commerce, the largest unit of the National Junior Chamber of Commerce, went on record as backing it and are trying to get junior chamber clubs in other cities to get behind the movement.

Plans are for the sending of another special train to Washington from this district, with as many men as possible to be secured from any point. The arrival of this second train will be scheduled at about the time the finance committee of the senate reaches the free list on the tariff bill. This should be within the next two weeks. Already a number of oil and some representatives of various civic organizations as well as merchants have signed up for the second trip.

An office has been opened in Tulsa, at 201 Tulsa Club Building, which space was offered by the Tulsa Chamber of Commerce. It became necessary before last Saturday to employ two stenographers and have three phones put in to handle the work.

In Tulsa, a meeting was held Wednesday night, at which time steps were taken to set up a permanent organization in this district and to carry on a permanent campaign. While lacking the numbers present at the tariff mass meeting held in Tulsa, January 29, the meeting had more leaders of the independent petroleum industry present.

At the Tulsa meeting steps were taken to set up a permanent organization. James G. Cloud, president of Operators Oil Company was made chairman; with Paul S. Ache, president of Reiter-Foster Oil Corporation, as vice-chairman; Dudley C. Monk, attorney, secretary; and George A. Dye, vice-president and general manager of the H. F. Wilcox Oil & Gas Company, treasurer.

Committee chairman were named as follows: Membership—Homer T. Lamb, president of Red Bank Oil Company; Finance—M. M. Valerius, president of Valerius Corporation; Statistics—James H. Gardner, president of Gardner Petroleum Corporation; Trip to Washington—Paul S. Ache.

California Independent Organizing

A wire to Dudley C. Monk from Kenneth R. Wolley of Los Angeles states that the independent oil men of California are organizing to join in the oil tariff fight.

Similar steps to those being taken at Tulsa are being taken at Fort Worth, San Angelo, Oklahoma City, Wichita and other points in the Mid-Continent. Meetings will shortly be held in many other places. The purpose of these regional meetings is to form a more closely knit organization of the independents and to create additional interest in the tariff question.

Texas Independent Oil Operators Organizing

Fort Worth, Texas. — Preliminary steps for the formation of a state-wide organization of independent oil operators to be known as the Independent Petroleum Association of Texas were taken during a gathering of oil men here February 11. This organization will later become affiliated with the Independent Petroleum Association of America, which has been very active in a campaign for a tariff on crude imports under the leadership of Wirt Franklin, Ardmore producer. The Fort Worth division of the proposed Texas organization was created during the meeting with a duly elected staff of officers and executive committee. C. L. Morgan, Fort Worth, presided as chairman of the meeting.

Roy A. Westbrook, president of Westbrook & Company and discoverer of the Hendrick field, was elected president of the Fort Worth division. Joe C. Maxwell, Fort Worth producer, was chosen vice-president, and C. L. Morgan, secretary-treasurer. The executive committee includes the three officers, and the following: A. J. Broderick, Jack Danciger, S. B. Edwards, Mel Ingleright, C. E. Hyde, C. Frank Kelsey, Lou D. Ladd, Stanley Thompson and Luther C. Turman.

Headquarters of the Fort Worth Division have been established at 1201-2 W. T. Waggoner Building. The services of an organizer and publicity department head will be engaged to proceed with plans of establishing branches in all the leading oil centers of the state. The by-laws of the association will be similar to those of the Independent Petroleum Association of America.

Valuation of Flood Oil Properties

(*Continued from page* 26)

Recovery of Oil per Acre

The yield per acre constitutes one of the fundamental factors for determining the value of properties, and has been the subject of considerable study by both operators and engineers. In examining properties already flooded the principal difficulty involved is the determination of the amount of acreage which has contributed oil to any particular well or group of wells.

One method of computing the past yield per acre is shown by Figure 1. This illustrates the line type of flooding. It is assumed that one-half of the diamond-shaped areas contributes oil to each first row of oil wells, and the entire diamond-shaped areas contribute oil to the second row of oil wells. However, the method gives exorbitant yields of oil per acre for the first row of oil wells and lower yields for the second and third rows and fails to take into consideration the fact that some areas are not flooded at all, and that the oil, besides moving from areas directly between the water and oil wells, also moves laterally to the oil wells, so that much more than one-half of the diamond-shaped area probably contributes oil even to the first row of wells. In fact, some of the oil midway between the oil wells of each row passes forward to the next row, as shown by the fact that second and third row wells commonly show a gradual increase in production for a year or a year and a half prior to the conversion of wells in the previous row from oil to water wells (see Figure 11); second and third row wells also produce more oil than first row wells.

Another method of calculating the past yield per acre is illustrated in Figure 2. In this case, semicircular areas are assumed to contribute oil to the first rows of oil wells while slightly larger areas contribute to the wells in the second and third rows. Here too, it is probable that a considerable area midway between the oil wells and midway between the water wells is never effectively drained but that oil is trapped there by the water which pushes in from the different sides.

Where as many as three or more rows of oil wells have been drilled, it is possible to obtain a close estimate of the past yield per acre by simply computing the total area inclosed by the straight lines joining the outer row of oil wells to each other, thus forming an approximate rectangular tract (Figure 2, *ABCD*). The percentage of error introduced by this method becomes progressively less as the number of rows of oil wells increases, though the probability still exists that portions of the area between the various wells are undrained and that some oil between the wells in each row has been swept forward to be partly recovered by wells in the succeeding row.

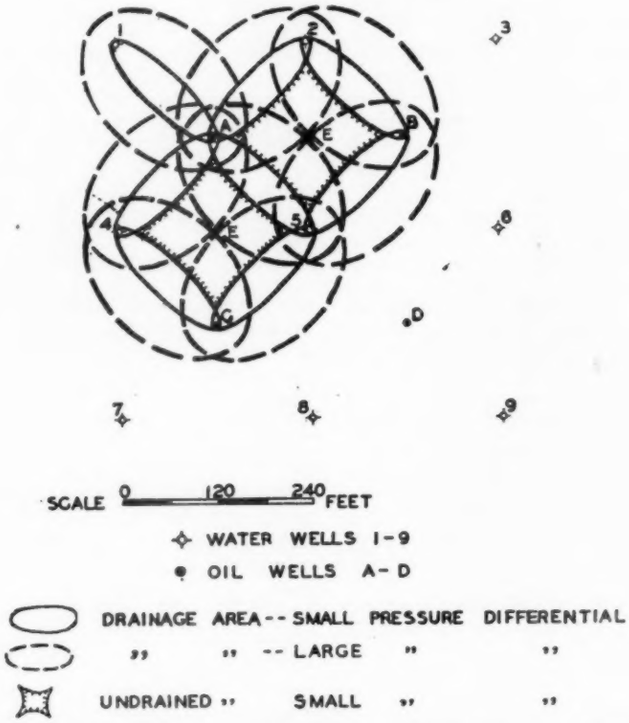


FIG. 7.—PROBABLE DRAINAGE AREAS UNDER DIFFERENT PRESSURE CONDITIONS.

As a result of tests made by various operators who have drilled wells in territory classed as "flooded out," it is believed that Figure 3 portrays more accurately the drainage conditions. The undrained portions are indicated by the star-shaped areas, while the remainder of the "flood area" is considered drained. The size of these various areas is a function of the spacing program, well pressures and sand characteristics. In many cases the wells are spaced so close together that no undrained areas exist; in other cases, the spacing may be so wide that as much as 20 per cent of the acreage is undrained; or again, the wider spacing may be offset by increased water pressure.

In Figure 7, an attempt is made to portray another conception of the drainage conditions and the shape of the area between the water wells and the oil wells, which is effectively drained under various pressures. It has been shown theoretically[2] that where wells are operated in pairs the area that actually contributes oil to a particular well under forced or water drive is elliptical in shape, and that the two wells involved lie at the foci of ellipses whose major axes connect the oil and water wells, but whose minor axes are dependent in size upon the difference in pressure between the two rows.

For example, in Figure 7, intake wells 1, 2, 4 and 5 supply water under pressure to the areas that contribute oil to oil wells *A, B, C* and *D*. Since the size of the area drained by an oil well under these conditions appears to be definitely related to the difference in pressure which exists between the water well and the oil well, the elliptical areas outlined by the solid lines may be taken to represent the relatively small territory that is drained when the difference in pressure between the water well and the oil well is small. As this pressure differential increases, the area from which oil is drained is gradually enlarged and complete drainage of the square enclosed by the water wells *A, B, C* and *D* takes place only when the difference in pressure between the water and oil wells is of such magnitude that the elliptical areas, outlined by the dashed lines, will intersect at a point midway between the water wells (Point *E*, Figure 7). To be more explicit, the area that is undrained at low pressure is represented by the star-shaped figure, indicated by the hachured lines, but when the pressures are sufficiently great to produce drainage from the area outlined by the dashed lines, the undrained portion disappears as these areas meet at *E*. Just how great the pressure need be can be determined by actual practice. For zones of different porosity the pressures need to vary, but average porosity will determine the practical operating pressures.

The conception of elliptical drainage areas is entirely in harmony with field observations, and besides explaining the undrained areas which occur in five-spot

[2] S. Herold: Analytical Principles of the Production of Oil, Gas and Water from Wells, 556-584.

MILLED GROOVE SCREEN is THE LAYNE

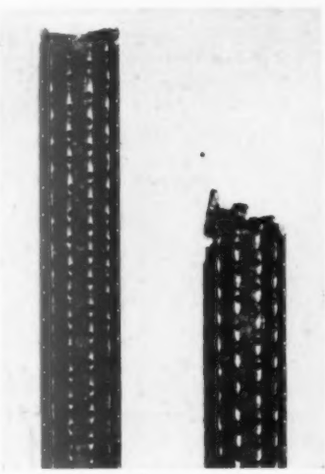
205,000 LBS. STRONG

Severe tests by the Pittsburgh Testing Laboratory reveal remarkable tensile strength of oil industry's latest and most practical invention — the *LAYNE MILLED GROOVE SCREEN.*

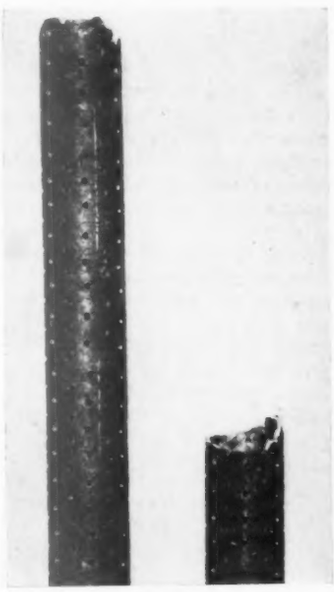
Test was made on a full length of pipe which was gripped in a 600,000 pound capacity Universal Testing machine and pulled to failure. The ends were plugged to prevent their collapsing under the pressure required to grip them. An attempt was made to obtain the yield point as indicated by the drop of the weighing beam, with results as follows:

Specimen—	Load at Yield Point, Pounds	Ultimate Load, Pounds	Avg. Wall Thickness, Inches	Avg. O.D. Inches
Drilled Pipe	186,800	310,750	.368	5.0014
Milled and Drilled Pipe	205,000	307,600	.382	5.005

This is your definite guarantee for utmost dependability in the greater production screen — install *Milled Groove* instead of wishing you had.



Milled Groove Tensile Test



Drilled Pipe Tensile Test

The Layne & Bowler Co.

Houston THE LAYNE Texas

Increases Production

The Layne New York Co. 30 Church St., New York — The Layne & Bowler Corp., Los Angeles, Calif. — Vickers, Limited, London, England

A QUARTER CENTURY OF EXPERIENCE AND DEVELOPMENT

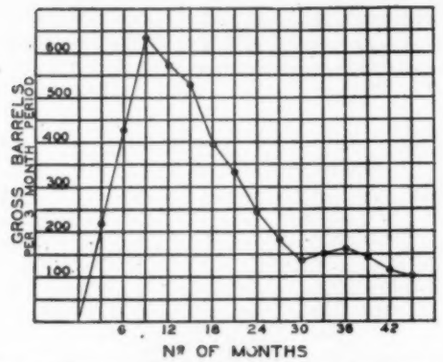


FIG. 8.—TYPICAL PRODUCTION CURVE FOR AVERAGE WELL IN FIRST ROW OF LINE FLOOD.

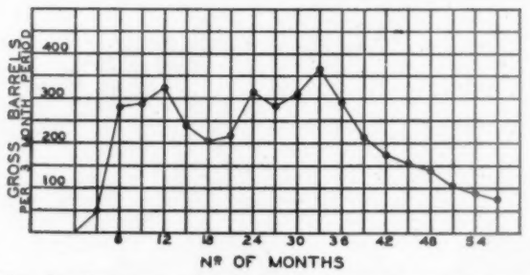


FIG. 9.—PRODUCTION CURVE FOR AVERAGE WELL IN SECOND ROW OF SAME LINE FLOOD AS IN FIG. 8.

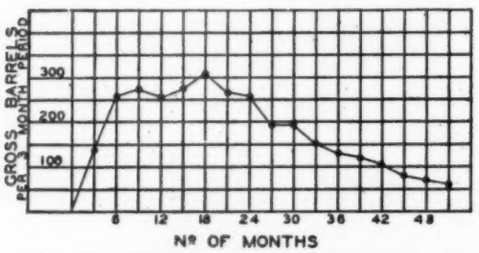


FIG. 10.—TYPICAL PRODUCTION CURVE FOR AVERAGE WELL IN FIRST ROW OF LINE FLOOD IN DIFFERENT PART OF FIELD FROM THOSE OF FIGS. 8 AND 9.

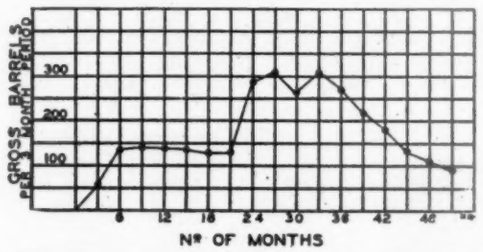


FIG. 11.—TYPICAL PRODUCTION CURVE FOR SECOND-ROW WELL IN LINE FLOOD.

This illustrates the fact that much flood production is obtained from second-row wells prior to time when wells of first row are "dumped."

development it also accounts for them in line flooding, as shown in Figure 3.

Undrained Portions of Flooded Areas.—The differences in the yield obtained by similar methods of flooding, but with different spacing programs, has raised the question among operators as to whether or not all of the acreage within the flood area is yielding to the action of the flood water. In the few cases where operators have drilled midway between two water wells they have obtained sufficient oil to show that nearly 15 per cent of the area bounded by four water wells, two of which were formerly oil wells, had not been drained. The size of this undrained area will not be the same in all cases, but will be dependent on the porosity of the sand, the depth of the wells, where natural water pressures are used, or upon the total pressures where artificial pressures are used, as well as upon the spacing program; other conditions being equal this area will be much larger where wider spacing is practiced. It is possible to reduce the spacing to a sufficiently small distance so that other conditions being equal the undrained star-shaped area can be wholly eliminated (Figure 3).

In the case of five-spot spacing, similar undrained areas will also exist midway between the various water wells unless the pressures used are sufficiently great to cause the elliptical drainage areas between each pair of wells to meet midway between the wells.

Estimated Yields per Acre.—Forecasts of the amount of oil to be recovered from areas that are under the influence of flood water and are still producing oil can be made by judicious use of graphs. The past production may be plotted either on a monthly basis, or by three, four or six-month periods, and the future production estimated by extrapolating the curves. This method gives satisfactory results where no change in operating conditions takes place and makes it possible to forecast yields per well, or yields per acre where other conditions are comparable. Figures 8 to 11 represent the production history of typical line floods and Figures 12 and 13 the history of typical five-spots in the Bradford area. Such charts can be used in estimating yields per well and per acre.

Where floods have been in operation for long periods and many flood oil wells have completed their cycle of life and been converted into water wells, curves can be obtained which are of great value in studying other nearby properties. By taking a large number of such curves for several different properties and averaging the production per month by various months, sufficient data can be obtained to make possible the construction of a graph which represents the average well curve for any particular area. Such curves can be used in forecasting the production to be obtained from wells whose life has been too short to make possible the construction of individual curves.

Water Supply.—For the most part, the water used in flooding operation is obtained from shallow water zones which extend from just beneath the surface to a depth of some 300 feet. A string of tubing reaching from the water sand to the oil sand, with a packer at each end, carries water down to the oil sand and operates with practically no attention.

In some cases a central water supply is maintained, with a distributing line to each water well, which is tubed from the top of the ground to the oil sand. Where artificial pressures are used the latter is the common procedure.

Since the principal source of supply is from shallow water sands the quantity is definitely related to seasonal weather. In recent years a shortage of water has developed in many localities contemporaneously with prolonged droughts. Such a shortage of water is a serious handicap to flooding operations; it is invariably accompanied by a decline in oil production. Where wells are being operated under artificial pressures the water shortage is even more serious, since it is important that high pressures, having once been established, should be maintained; when not maintained, the water has a decided tendency to migrate along definite channels, and once such channels have been established, it is almost impossible to restore the condition which brings about drainage from areas outside of the established channels. Various operators report that they have found it impossible, after a long period of dry weather, to bring their flood wells back to the production that prevailed before the drought set in.

A recent project by the Petroleum Reclamation Company pipes large quantities of water from wells located in the bottom of the Allegheny River, and makes such water available to various producers at a small cost per barrel.

Rate of Water Migration.—The rate at which the water migrates through oil horizons depends on the tightness of the sand (the porosity) and the pressure under which the water acts. Observation has shown that the rate of movement is different in different directions and is somewhat influenced by such characteristics as cross bedding and lenticularity. In general, a rate of six feet per month may be considered an average figure; this is equivalent to approximately two inches per day. A few instances are known

where the flood water traveled much more rapidly in one direction than in any other, but where relatively close spacing is practiced such variations tend to become of minor importance. Experiments carried on by the writers in recent years showed that where the rate of movement exceeds two inches per day, the water has a decided tendency to by-pass part of the oil.

Using the most recent methods of flooding, whereby the quantity of water introduced per day into each well is definitely controlled, it is possible to also control the rate at which the flood moves.

Quantity of Water Required per Well per Day.—The quantity of water required to flood the sand between wells depends on the thickness of the sand, its porosity and the distance from water well to oil well. The rate of water intake depends on these same factors as well as upon the pressure at which the water is introduced. In the case of a group of wells from which cores had been obtained, the average thickness of the sand was found to be 38 feet and the average porosity 15 per cent; these sands were found to take 40 barrels of water per day at a pressure of approximately 1250 pounds at the sand. Under these conditions, and assuming uniform sand conditions, Table 1 represents the relative position of the water front from the intake well after a given number of days.

TABLE 1

Relative Position of Water Front

Number of Days Required		Distance from Water Well to Water Front, Feet
1.8		5
7.2		10
45		25
116		40
118		50
306		65
407		75
588		90
725		100
1160		125
1660	= 4.5 years	150
2220	= 6.08 years	175
2550	= 6.98 years	187

Where the sand is thinner, less time will be required to saturate it; where the amount of water introduced per day is less, more time will be required.

A spacing program of 175 feet from water well to oil well required six years for the area between the oil and water well to become saturated with water if no water is removed, and a spacing program of 150 feet from water well to oil well requires 4½ years, or 54 months. However, since slight quantities of water are already present in the sand, and the oil wells are commonly abandoned before going completely to water, the average life of the oil wells under these conditions should range from four to six years.

Spacing Program.—In line flooding the distance between water wells has commonly ranged from 150 to 210 feet and the distance from water wells to oil wells from 100 to 180 feet. Earlier methods of five-spotting used about 200 feet between water wells but where artificial pressure is applied the distance between water wells has been increased to as much as 300 feet

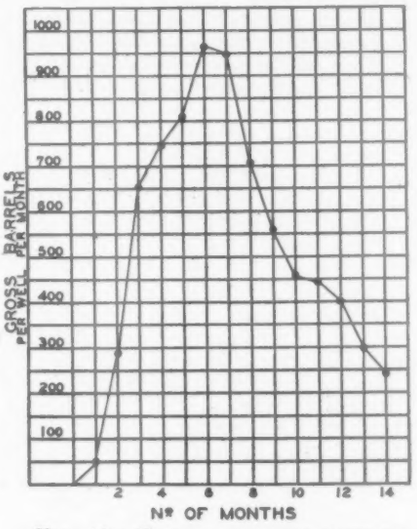


FIG. 12.—TYPICAL PRODUCTION CURVE FOR FIVE-SPOT FLOODING WITH ARTIFICIAL PRESSURES.

with the distance from water wells to oil wells varying from 175 to 200 feet.

Spacing has an important bearing on both the cost of development and the ultimate value of the properties, since it has much to do with the yield per acre. It is desirable to use such spacing as will recover the maximum quantity of oil, under the pressures used, with the smallest possible number of wells per acre. The present tendency is toward wider spacing, but wider spacing calls for decided increases in pressure if all the area between the wells is to be flooded. Table 2 shows for five-spot drilling in influence of the spacing program on the number of wells per acre.

TABLE 2

Influence of Spacing Program on Number of Wells per Acre in Five-spot Drilling

Spacing Water Well to Water Well and Oil Well to Oil Well, Feet	Water Well to Oil Well	Wells per Acre	Acres per Five-Spot	Acres per Well
150	106	3.87	0.517	0.259
175	123	2.84	0.703	0.352
200	141	2.18	0.918	0.459
210	148	1.98	1.01	0.505
220	155	1.80	1.11	0.555
230	162	1.65	1.21	0.605
240	169	1.52	1.32	0.660
250	176	1.40	1.43	0.715
260	183	1.29	1.55	0.775
270	190	1.20	1.67	0.835
280	197	1.11	1.80	0.900

This table may also serve as a basis for determining the spacing program used in the appraisal of undeveloped areas. After taking into consideration the cost of development and the yield per acre under various spacing programs, it appears that the economical average spacing distance should not exceed 220 feet from water well to water well and the distance from water well to oil well should be 160 feet or less. Where wider spacing is used the saving in development cost is more than offset by the reduced yield per acre. Since the hydrostatic head of the water is a function of the well depth these distances may be slightly greater for deep than for shallow wells.

Life of Flood Wells.—In a large number of properties studied, the average life of line flood oil wells is about 54 months; however, many wells in the first and second rows are converted from oil wells to water wells while still producing commercial quantities of oil. It is estimated that the average life of five-spot oil wells will be about 30 months, though this will depend on the rate of water intake, which in turn is dependent on sand thickness, porosity and water pressure (Figures 12 and 13).

Rate of Production per Well per Day

The rate of production per well per day passes through a definite cycle. Commencing at a small initial production, which is usually less than one-half barrel per day, the production of line flood wells gradually rises until after some months, the number varying from 12 to 36, it reaches a peak of as much as 12 or 15 barrels per day. In the case of five-spot floods, the peak may be as high as 40 barrels per well per day and this rate may be reached with 12 months from the beginning of the flood. Variations in the water supply or even in the porosity of the various sand layers may cause the formation of a second peak of production. After the peak has been passed, the wells decline, make increasing quantities of water, and must finally be abandoned.

The curve showing the production history of a flood well is notably different from that of other oil wells in having both a rise and fall and a more or less prolonged period of sustained production.

Operating Costs

Many properties in the Bradford territory have been examined and detailed analyses of operating and overhead costs have been studied. Based on these various studies, the lifting costs of oil and water, the repairs, labor, operation of pressure plant, compensation insurance, taxes, telephone and telegraph, miscellaneous supplies, etc., bring the operating cost per barrel to from 50 cents to $1.50. Such costs are less under five-spot flooding than with other methods.

Price of Oil

Since January 1, 1925, the posted price of Pennsylvania crude has ranged from a

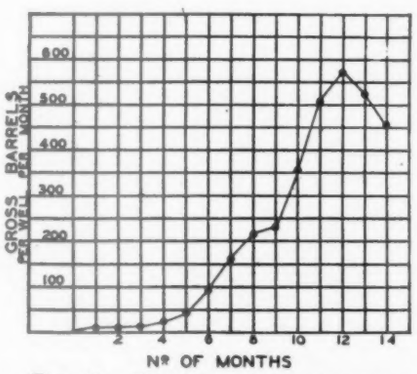


FIG. 13.—TYPICAL PRODUCTION CURVE FOR FIVE-SPOT FLOODING WITH ARTIFICIAL PRESSURES.

low of $2.65 during the latter part of 1927 to a high of $4.10, the price which prevailed during the first half of the current year. The posted price on January 1, 1930 was $3.30 per barrel with a premium of 25 cents per barrel paid by most purchasers. It is safer to use the average price which has prevailed over a period of years than to attempt to forecast future price fluctuations.

The discount factor used in the appraisal of Bradford properties should be less than that commonly applied to other properties since the hazards of operations at Bradford have been reduced almost to those of the manufacturing industry. Dry holes are practically unknown, the cost of development and operation are established, and the only risks involved are those which depend on fluctuations in the prices of oil and variations in the yield per acre.

Controlled Gasoline Supply, The Key to Oil Prosperity

(*Continued from page* 24)

year since 1917, with culmination points indicated for the years 1919 and 1926 inclusive. This furnishes an interesting picture, since it will be noted that the largest percentage gains were apparently made during the years following 1922 and preceeding 1927. The year 1929, however, proved to be a period of unusually large consumption, exceeding the rate of increase established during the two preceding years. This also emphasizes the accuracy with which it has been possible to forecast the demand. As indicated on the chart, the demand during 1930 will apparently not reach the rate of increase prescribed during 1929, due, primarily, to the belief that motor vehicle registrations will not prove to be in the same proportion as during last year.

In estimating the gasoline demand for 1930, due consideration was given to prospective sales of motor vehicles, as well as the prospect of a further normal increase in demand from foreign sources. It is still too early to obtain final motor vehicle registration figures for last year, although it is believed that the total as of December 31, 1929, will exceed 27,000,000. It appears likely, therefore, even though the rate of sales falls below the rate established last year, that the registration figure will closely approximate 29,000,000 this year. On this basis, the average monthly registration during 1930 will be about 28,500,000, each vehicle consuming on an average of 506 gallons during the year. This reveals a total demand by motor vehicles in the United States of 14,154,000,000 gallons, or about 337 million barrels. In addition, there will probably be consumed a total of 60 million barrels for miscellaneous uses, and at least 75 million barrels for foreign consumption, aggregating in all, about 472 million barrels. Table 4 shows how the indicated demand during 1930 will probably be distributed throughout the 12 months. The last column carries a cumulative total which has been plotted graphically in Figure 7. The blank column, marked "actual," has been provided for the insertion of cumulative totals, domestic consumption plus exports, reported monthly by the United States Bureau of Mines.

In conclusion, let it be emphasized that the refining industry can not hope to realize any degree of stabilization this year unless immediate steps are taken to collectively control the supply of gasoline. Obviously, to control the gasoline supply is, in effect, to control the supply of all products of petroleum and, incidentally, to effect true conservation of the nation's crude supply. The outlook for profits this year necessarily depends upon the ability of the industry to maintain still run schedules in conformity with the limitations prescribed by the demand for gasoline. If runs to stills are curtailed this year, there is every reason to believe that the industry will realize prosperity. Control of the gasoline supply, therefore, resolves itself to become the key to oil prosperity.

TABLE 4
Gasoline Demand—1930
(Thousands of Barrels)

	Motor Vehicles	Misc. Dom. Cons.	Exports	Total	—Cumulative— Estimated	Actual
January	20,411	3,900	5,173	29,484	29,484	.....
February	20,766	3,709	4,622	29,097	58,581	.....
March	25,414	4,364	5,620	35,398	93,979	.....
April	26,374	4,855	6,725	37,954	131,933	.....
May	30,416	5,562	7,375	43,353	175,286	.....
June	31,477	5,755	7,723	44,955	220,241	.....
July	32,841	5,673	7,143	45,657	265,898	.....
August	33,094	5,945	6,434	45,473	311,371	.....
September	31,755	5,455	6,696	43,906	355,277	.....
October	28,850	5,127	5,593	39,570	394,847	.....
November	27,864	4,882	6,591	39,337	434,184	.....
December	27,738	4,773	5,305	37,816	472,000	.....
Total	337,000	60,000	75,000	472,000		

Oil Scouts to Select Convention Place

Fort Worth, Texas.—Selection of the date and meeting place for the next annual gathering of members of the National Oil Scouts Association of America will be decided during a special session of the executive committee to be held here 1 p. m. March 8. P. G. Booth, scout for Humble Oil & Refining Company, Cisco, is chairman of the executive committee, and has issued call for all members of the committee to attend. Dallas, Fort Worth, Mineral Wells and other cities have made a bid for the convention, and it is very likely that the former city will be favored, owing to the large number of scouts recently transferred to the Central East Texas district.

Maverick Springs

Casper, Wyoming.—The Continental Oil Company is moving in two 55,000-barrel steel storage tanks to its holdings on the Maverick Springs black oil field, in Fremont County on the Shoshoni Indian reservation. A production test is to be run and if satisfactory it is understood the company will lay a pipe line from the field to the town of Shoshoni where a tank farm site has been purchased, and where both the Chicago & Northwestern and the Chicago, Burlington & Quency railroads will be available.

Hobbs High

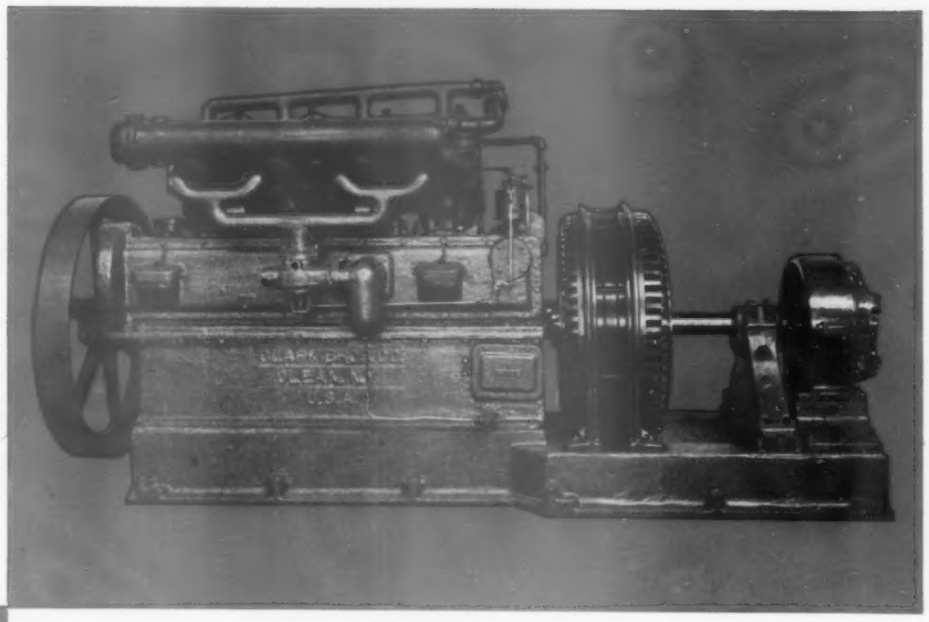
Artesia, New Mexico.—Midwest Refining Company has purchased the surface rights on a 120-acre tract near Hobbs, New Mexico, on which it is believed the company plans to build a refinery. The company is said to have some 70,000 barrels of crude in storage in this district.

Ohio Fuel Oil Company has purchased a one-thirteenth royalty interest in a 160-acre tract near Humble Oil & Refining Company's new big well in the Hobbs field. The reported price paid was $900 per acre.

Ohio Oil Company is starting two new tests in the Hobbs High district. One is State 1, se Section 32-18s-38e, which has rig up, and cellar is completed for another well on Section 15-22-36. The location for State 1 is about half-way between the Humble Oil & Refining Company's Bowers 1 and Midwest Refining Company's Capps 1. Both are very good wells and it is believed certain that the Ohio will develop some good production.

Tulsa.—Sunray Oil Company and Homaokla Oil Company's Newsom 1, SE NE NE Section 16-5-3e, near Chism in southeast McClain County, Oklahoma, is being drilled deeper. It has been producing a small amount of oil from the Viola lime topped at 3582 feet drilled to 3604 feet.

CLARK 4 Cylinder VERTICAL GAS ENGINE with Direct... ... Connected GENERATOR and Direct Connected EXCITER



SPECIFICATIONS

ENGINE

Four Vertical Cylinders
90 Brake H. P. at 400 R. P. M.
Uses natural gas or gasoline

GENERATOR

75 k. v. a.—400 R.P.M. usually 480 v.—
3-phase—60 cycle—
with direct connected exciter

Floor space 11½'x53"
Weight 15,000 lbs.
Height 78"

Generate Your Own ELECTRIC POWER at Minimum Cost

The CLARK Generator Unit is easily transported to any place where you would like to turn cheap gas into inexpensive electric power. Many operators are finding that this compact, durable and dependable unit fills a long standing need.

CLARK BROS. COMPANY
OLEAN, N. Y.

Export Offices: 150 Broadway, New York City.
Mid-Continent Sales Offices: Tulsa and Ft. Worth.
Warehouses: Tulsa, Oklahoma; McCamey and Sweetwater, Texas; Artesia, N. M. California: Smith, Booth, Usher Company, 228 S. Central Ave., Los Angeles.

Compressors and Gas Engines

CLARK

COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

SUMMARIZED REVIEW OF FIELD RESULTS

State—	Completions This week	Completions Last week	Producers This week	Producers Last week	Gas Wells This week	Gas Wells Last week	Failures This week	Failures Last week	Initial Prod. This week	Initial Prod. Last week
Aransas	1	2	1	2	..	..	..	..	3	102
California	20	13	20	12	..	..	..	1	12,125	12,400
Illinois	1	5	..	4	..	..	1	1	...	83
Indiana	1	2	..	2	..	..	1	..	...	14
Kansas	14	21	7	6	2	3	5	12	1,775	1,655
Kentucky	14	8	3	5	4	2	7	1	126	75
Louisiana	15	11	6	3	1	4	8	4	4,222	870
Michigan	4	4	1	4	..	..	3	..	252	1,285
New Mexico	1	2	..	1	..	..	1	1	...	225
New York	15	..	15	..	..	..	..	..	61	...
Ohio	20	40	6	13	10	18	4	9	214	707
Oklahoma	48	47	31	36	4	5	13	6	58,948	130,306
Pennsylvania	69	5	61	4	6	..	2	1	286	17
Tennessee	..	36	..	11	..	18	..	7	...	112
Texas	136	119	72	69	9	7	55	43	28,942	45,630
West Virginia	22	..	3	..	17	..	2	..	25	...
Total	381	315	226	172	53	57	102	76	78,037	193,481
Increase this week	66	..	54	..	..	..	26	..	...	...
Decrease this week	..	..	..	..	4	..	..	..	115,444	...

CALIFORNIA

Company, Well and Loocation	Initial Production Bbls.	Depth
KERN FRONT—		
General Petroleum Corp., Wetmore 14	250	2040
LONG BEACH—		
Cal Mex Oil & Ref. Co., No. 25	1200	8005
A. T. Jergins Synd., Municipal 25	500	8303
Lyons and Bourdo, Keaton 1	100	7503
Western Oil and Ref. Co., Harding 12	750	6900
MT. POSO—		
Union Oil Co., Tribe 9	100	1795
MIDWAY—		
Republic Pet. Co., No. 36	400	2870
RICHFIELD—		
Jimsco Oil Co., No. 1	175	4510
Union Oil Co., Chapman 28	300	3965
Continental Oil Co., Mondotte 2	250	4490
MARICOPA FLATS—		
Standard Oil Co., Fee 10-9K	125	3590
Doyle Pet. Co., Son-Crail 2	2000	3595
SANTA FE SPRINGS—		
General Pet. Corp., S. F. 205	725	8085
Wilshire Annex Oil Co., Crawford 2	1000	8002
Associated Oil Co., Dewenter 9	2600	7925
Italo Pet. Corp., Brunson 3	200	7945
St. Helens Pet. Co., Hill 2	600	7985
Standard Oil Co., Walker 22	300	7560
SANTA MARIA—		
O. C. Fields Gasoline Co., Bradley 1	50	5268
VENTURA—		
Shell Oil Co., Taylor 45	500	6155

OKLAHOMA

Company, Well and Loocation	Initial Production Bbls.	Depth
CADDO COUNTY—		
Magnolia Pet. Co., Rowe 7, nwc c sw ne, 36-6n-10w	600	3276
HUGHES COUNTY—		
Prairie, Canard 2, se ne nw, 28-6n-10e	¶15	2777
Producers & Refiners Corp., Coker 1, c sw sw 12-7-8e	¶2½	2930
Inglehart et al, Brooks 1 "B," c nw sw 28-9-10e	*	240
KAY COUNTY—		
Blackwell Oil & Gas Co., Liegrote 2, nw se nw 29-25-1w	30	4338
LINCOLN COUNTY—		
Magnolia, Staubus 2, ne sw se 8-14-14e	190	5036
LOGAN COUNTY—		
Shell Corp., Storey 4, se ne sw 30-19-4w	785	5979
J. S. Cosden, Inc., Gardner 2, nw ne nw 31-10-4w	400	5958
MARSHALL COUNTY—		
Max Westheimer, Watts 1, nw c ne 26-5s-5e	*	590
Burrough and Dennis, McComas 1, sw c nw sw, 13-5w-5e	*	650
MUSKOGEE COUNTY—		
Muskogee Natural Gas Co., Smith 3, sec nw se se 18-13-19e	*	980
NOBLE COUNTY—		
Prairie et al, Wentz 1, nw c sw 22-22-1e	150	3310
OKFUSKEE COUNTY—		
Prairie, et al, Beidleman 1, ne c 8-13-10e	75	3379
OKLAHOMA COUNTY—		
Prairie and Tom Slick, Hiddleston nwc se 19-11-2w	15,795	6548
Prairie and Tom Slick, Hiddleseton 5, nw sw se 19-11-2w	11,460	6521
Indian Territory Illuminating et al, Button 3, nw c sw, 19-11-2w	11,118	6516
OKMULGEE COUNTY—		
Dodge, Chaney and Jenkins, Fee 1, swc se, 28-15-12e	*	2677
J. L. Selby, Flint 18, sw c nw ne, 26-14-14e	*	1060
PAWNEE COUNTY—		
Martin et al, Cotton 6, c ne sw, 6-20-8e	170	2628
PONTOTOC COUNTY—		
Texas Pacific Coal & Oil Co., Hatcher 3, nw ne ne 30-5-5e	60	2520
Delaney and King, Adams 1, sw se ne, 32-5-8e	*	1302
POTTAWATOMIE COUNTY—		
Mid Cont. Pet. Corp., Rogers 6, ne sw sw, 5-9-53	165	4405
Prairie, McGee 1, sec nw 4-7-4e	610	3848
Prairie, Bodkin 1, sw c 26-8-4e	55	3874
Magnolia, Billington 1, sw c 30-9-5e	*	4440
Amerada, Smith 3, ne c 8-8-5e	*	4069
SEMINOLE COUNTY—		
Sinclair, Culley 2, nw c 13-5-7e	65	4373
Culley 1, sw nw nw 13-5-73	65	4393
Independent and Atlantic Oil Prod. Co., Fixico 3, sw c nw 20-9-6e	2917	4235
Prairie and Tom Slick, Harjo 2, se ne nw, 8-7-7e	200	3199
Harjo 3, ne se nw 8-7-7e	¶43-120	3195
Tiger 2, sw nw ne, 8-7-7e	1250	3188
Producers & Refiners Corp., Harjo 1, sw c nw 7-5-8e	¶3	2653
Gypsy, Maley 4, se nw nw 20-9-6e	655	4257
Independent & Atlantic Oil Prod. Co., Fixico 2, ne sw nw 20-9-6e	1535	4232
The Texas Co., Magruder 4, nw se nw 19-9-6e	690	4250
Magruder 2, ne se nw, 19-9-6e	1885	4180
Magruder 1, sw c nw, 19-9-6e	135	4149
Sinclair, Nichols 8, nw ne nw, 19-9-6e	555	4255
Shell Pet. Corp., Hopper 8, sec ne, 19-9-6e	4018	4213
Carter, Mayhue 2, se c sw 11-9-6e	805	4166
Continental Oil Co., McGuire 1, ne se se, 24-9-5e	2140	4185
Gypsy Oil Co., Factory 1, nw c 19-7-7e	¶10	3123
Burke-Greis Oil Corp. et al, Powell 2, sw ne sw, 17-9-6e	*	4300
Gypsy Oil Co. et al, Bruner 1, ne se nw, 23-8-5e	*	4336
Superior Oil Co. and Magnolia, Reed 2, cel nw nw nw 9-7-7e	*	4272
STEPHENS COUNTY—		
Wirt Franklin Pet. Corp., Spain 2, sw c nw, 9-2s-6w	250	3144
Dunmar Oil Co., Anderson 1, sec 9-2s-6w	¶8-350	2853
T. B. Slick, Blake 1, ne c sw sw, 16-1s-8w	*	2877

KANSAS

Company, Well and Loocation	Initial Production Bbls.	Depth
COFFEY COUNTY—		
Ritchey & Moore, Tebbens 1, nw c, 18-23-15e	45	1615
Ellis et al, Sheldon 1, se c ne, 27-22-14e	*	1663
COWLEY COUNTY—		
Roth & Faurot, Stone 1, se sw ne, 34-32-4e	*	3465
ELK COUNTY—		
Minnehoma Oil & Gas et al, Denton 5, c w½ sw, 3-31-8e	600	1950
Mann et al, Hazlett 1, c sw se 12-31-8e	¶2½	1512
GREENWOOD COUNTY—		
Prairie and A. M. Landon, Newhouse 2, nw ne ne 1-24-11e	640	1794
Simmons and Amerada, Ellis 2 "B," sw ne nw 27-23-11e	125	1940
Empire, Patterson 6 "C," nw c se, 36-23-11e	265	1844
LYON COUNTY—		
Balliere et al, McKee 1, sw c se, 32-21-11e	*	2068
MARION COUNTY—		
Alladin Pet. Co., Rample 2, nw se se 12-19-2e	60	2845
White Eagle Oil & Ref. et al, Ucker 1, ne c nw 24-17-2e	*	3265
McPHERSON COUNTY—		
Prairie & Tom Slick, Stuckey 1, nwc sw 10-21-3w	2040	3364
MORRIS COUNTY—		
Loomis et al, Grunter 1, cnl ne se, 16-16-7e	*	1475
SUMNER COUNTY—		
Dickey et al, Kratz 3, swc nw, 26-34-2e	¶8	1574

EASTERN STATES

PENNSYLVANIA

Company, Well and Loocation	Initial Production Bbls.	Depth
BRADFORD FIELD—		
South Penn Oil Co., Bingham 150 tr 33	3	....
Bingham 150 tr 34	3	....
Bingham 150 tr 35	3	....
Bingham 390 tr 15	4	....
Bingham 554 tr 18	7	....
Bingham 475 tr 12	3	....
Bingham 439 tr 127	3	....
Bingham 499 tr 3	4	....
Bingham 539 tr 5	3	....
Taylor 47	8	....
Fee, 104	3	....
Fee, 105	2	....
Fee, 106	7	....
Fee, 107	10	....
Jones, 275	5	....
Riddle Estate, 20	5	....
N. V. V. Franchot, Trustee, Rounds, 24	18	....
Minard Run Oil Co., Bingham, 3	20	....
Hamlin, 21	10	....
L. F. Kinley & Co., Mantz, 58	2	....
Bradford Producing Co., Weston, (3 oil wells)	6	....
Mix Creek Oil Co., Mix Creek, 89	3	....
Mix Creek, 90	3	....

(Continued on page 84)

Steel has been put to another new and admirable use, for drilling operations, in the KM CO Steel Jack Posts and Sampson Posts. All A. P. I. specifications have been incorporated in their design.

KM CO Steel Machinery Supports are constructed from standard structural steel shapes and are rugged enough for the most severe work. Jack Posts are of the same size for front or back location. Sampson Posts are made in two sections for convenience in transportation and erection. Heavy girt brace in Sampson Posts prevents any distortion in leg sections. All KM CO Steel Machinery Supports are protected by aluminum paint. Low installation costs and high salvage recovery, as well as elimination of fire hazards are salient features to consider in the use of KM CO Steel Machinery Supports.

PRODUCTS

Steel Derricks, Rig Irons, Bull Wheels, Calf Wheels, Band Wheels, Crown Blocks, Tug Wheels, Sand Reels, Steel Tankage, Tank Fittings, Refinery Equipment, Steel Plate Construction.

THE KIRK-MORROW IRON WORKS COMPANY

Sales Offices: Hunt Bldg., Tulsa, Okla.; Magnolia Bldg., Dallas, Texas; Central Bldg., Wichita, Kans.

(Continued from page 84)

Company, Well and Location	Initial Production Bbls.	Depth
V. Schopperle, Duke & Co., 24	2	
Duke & Co., 25	2	
Brink & Brink, Bingham 468 tr 13, 12		
Schorman & Stover, Stover & Co. 1	12	
D. T. Andrus & Co., Bingham 321 tr 19	10	
A. L. & M. L. Lilly, Middaugh, 23	4	
Fee, 29	4	
D. J. Moody, Moody, 34	4	
First Nat. Bank of Olean, Keating, 6	5	
J. A. Walters Estate, Walters, 32	7	
W. F. Hunt, Hunt 1	4	
Robert Roy, Roy 1	4	
Hazlewood Oil Co., Bingham 186 tr 73	2	
Walker Bros., Bingham, 6	5	
Deiter Bros., Deiter, 2	4	
Penn Pet. Co., Duke, 4	3	
C. E. Potter, Russell, 12	4	
R. O. Landers & Co., Landers, 25	3	
Luke Bros., Haines, 1	2	
Healey Pet. Corp., Healey, 38	3	
Healey, 39	4	
BUTLER COUNTY—		
W. J. Thompson & Co., Voeghly, 1	4	
M. B. Finnessy, Shaner, 19	¶1	
McCullough & Co., McCollough, 3	¶1	
Purvis, Morgan & Co., Fee, 2	5	
Elliott & Dufford, Zinkham, 3	5	
J. Vogt, Vogt, 1	2	
L. T. McGinnis, McGinnis, 14	*	
Blair & Stewart, Fee, 12	2	
GREENE COUNTY—		
Manufacturers Light & Heat Co., Wise	¶1½	
CENTER-MIDDLE FIELD—		
P. C. Jordon, Lot 202 tr 2	7	
Hague & Co., Aspy, 3	2	
H. Anderson, Bailey, 1	2	
S. Y. Ramage, Grandon, 21	3	
VENANGO COUNTY—		
Thomas McLaughlin, McLaughlin, 22	¶½	
F. C. Deemer, Meherton, 17	3	
Meherton, 18	2	
W. S. Bowman, Exchange Bank & Trust, 1	7	
South Penn Oil Co., Russell, 2	5	
H. M. Hess, Weaver, 1	*	
Fryburg Motor Co., Bush 7	¶½	
Franklin Trust Co., Varner, 9	¶½	
P. C. L. & P. Grimm & Jenkins, 46	2	

NEW YORK

ALLEGANY COUNTY—		
Sepany Oil Co., Stewart Estate, 13	12	
Ryder-Richmond Oil Corp., Fee, 66	3	
Fee, 67	3	
Fee, 68	3	
N. V. V. Franchot, Fries, 21	5	
C. M. Lippert & Co., Lippert, 27	3	
Gilligan & Dermitt, Fee, 3	7	
Fee, 4	7	
A. C. A. Oil Corp., Fee, 2	2	
South Penn Oil Co., Reeland, 13	3	
Bartoe & Co., Bartoe, 1	3	
Herbert Soring, Spring, 2	2	
B. C. Tuller, Tuller, 2	3	
A. H. Ashworth, Ashworth, 2	2	
Smith & Gray, Gray & Co., 2	3	

WEST VIRGINIA

ROANE COUNTY—		
Heck Oil Co., Emoch Hrs., 5	10	
Hardly Able Oil & Gas Co., Nichols, 1	¶¼	
Hope Construction & Refg. Co., Vandal, 2	10	
United Fuel Gas Co., Harless, 1	¶½	
CALHOUN COUNTY—		
Chemical Oil & Gas Co., Fling, 1	¶¼	
F. F. McIntosh & Co., McCoy, 1	¶1¼	
Southeastern Gas Co., Einger, 1	¶1¼	
Godfrey L. Cabott, Inc., Smith Hrs, 1	¶2	
RITCHIE COUNTY—		
Hope Construction & Refg. Co., Moats, 1	¶¼	
Swearinger & Co., Martin Hrs, 1	¶¼	
TYLER COUNTY—		
Oakland Oil & Gas Co., Watkins, 1	¶¼	
J. H. Pentz, Smith, 3	¶¼	
BOONE COUNTY—		
Osborne Dev. Co., Roberts, 3	¶1	
Mountain States Fuel Gas Co., Pritchard-Hill, 1	¶1	
MINGO COUNTY—		
F. H. Yates, Cowden-Workman, 2	¶8	975
Red Jacket Oil & Gas Co., Fee, 11	1½	
GILMER COUNTY—		
Alfred Ellis & Co., Ellis, 2	*	
Carnegie Natural Gas Co., Young, 1546	¶1¼	
WOOD COUNTY—		
Allman & Horner, Reckard, 2	5	
HARRISON COUNTY—		
Johnson & Moses, Flannigan, 2	¶1¼	
WETZEL COUNTY—		
Littleton O & G Co., Ward-Cain, 1	*	
CABELL COUNTY—		
United Fuel Gas Co., Sinter, 3940	¶1	

KENTUCKY

PERRY COUNTY—		
J. T. Justice, Hazard, 1	¶5	
HOPKINS COUNTY—		
Missouri-Kansas Pipe Line Co., Lester, 3	¶3½	
JACKSON COUNTY—		
Petroleum Explo. Co., Wolfork Land Co., 3	*	
CLAY COUNTY—		
Petroleum Explo Co., Baker, 1	¶¼	
Peters, 1	¶¼	
DAVIESS COUNTY—		
Petroleum Explo. Co., Clark, 3	80	
Cumberland Pet. Co., McCormick, 1	*	
Eastern Gulf Oil Co., Chapman, 3	*	
OHIO COUNTY—		
Ohio Oil Co., Kelley, 13	40	
D. J. White & Co., Bickett, 5	*	
Dixon Oil Co., House, 1	*	
Louisville Gas & Electric Co., Miller, 4	*	
Jas. C. Ellis & Co., Greer Hrs, 1	*	
Greer Hrs, 2	6	

SOUTHEASTERN OHIO

MONROE COUNTY—		
Preston Oil Co., Carpenter, 1	¶¼	
J. A. Colsburg Oil & Gas Co., Baker, 1	¶¼	
C. Berg, Neib, 5	*	
MORGAN COUNTY—		
Ohio Fuel Gas Co., Cosgrove, 2	*	4000
Van Fossen & Scot, Donahoo, 25	¶¼	562

CENTRAL OHIO

MUSKINGUM COUNTY—		
Wittmer Properties, Trus. Baker, 1	30	4218
Athey Co., Osborne, 1	5	4450
Mealick & Ford, Ford, 1	¶¾	3585
Mid-East Gas Co., Porter, 3	¶¼	3410
KNOX COUNTY—		
Ohio Fuel Gas Co., Frank, 1	*	
Upham Gas Co., Workman, 2	¶1	2757
COSHOCTON COUNTY—		
Ohio Fuel Gas Co., Carpenter-Conkle-Wagers, 1	78	3461
HOLMES COUNTY—		
East Ohio Gas Co., Bucy, 2	.2	3441
ATHENS COUNTY—		
Ohio Fuel Gas Co., Fleming, 2	¶¼	1530
MEDINA COUNTY—		
Hulse & Kubdtz, Young, 2	¶2½	
Cambridge Glass Co., Hague, 1	*	1344

NORTHWESTERN OHIO

ALLEN COUNTY—		
H. F. Kelley & Co., Daubler, 2	15	1383
OTTAWA COUNTY—		
T. F. Lewis & Co., Blossey, 3	6	1320
SENECA COUNTY—		
W. J. Poyser & Co., Rosenberger, 3	80	1500
J. H. Murphy & Sons, Fry, 1	¶¼	1654

INDIANA

GIBSON COUNTY—		
Indiana O & G Corp., Buck, 1	*	1034

ILLINOIS

Hancock, Hewer & Taft, Hofstetter, 1	*	880

MICHIGAN

ISABELLA COUNTY—		
Leonard O & G Co., McClintic, 7	252	
New York Pet. Gas Co., Hughes, 1	*	3675
Spigel O & G Co., Conrad, 1	*	3690
St. Clair O & G Co., Walker, 1	*	3772

ARKANSAS

Company, Well and Location	Initial Production Bbls.	Depth
UNION COUNTY (Smackover)—		
Pure Oil Co., Friend 8, 6-16-15	3	2301

NORTH LOUISIANA

CADDO PARISH—		
Simplex Oil Co., Thomas 6, 15-20-15	12	2220
RICHLAND PARISH—		
Ark. La. Pipe Line Co., Purvis 1, 34-17-6e	¶53¼	2450

SOUTH LOUISIANA

BAYOU BLUE—		
Standard, Wilbert 3	150	1980
GARDEN ISLAND BAY—		
The Texas Co., Garden Island Bay 3	*	2000
HACKBERRY—		
Star Pet. Corp., Lacy 1	*	1965
MALLARD BAY—		
Shell, A. Marceaux 1	*	7230
STARKS DOME—		
Texas Gulf Sulphur Co., Ind. Lbr. Co. 1	*	1525
PORT BARRE—		
Gulf, Lahaye 1	2400	3380
The Texas Co., Botany Bay 4	1200	3425
SULPHUR—		
Union Sulphur Co., Fee 754	*	5015
Fee 753, wo	*	4600
Fee 758	400	3375

TEXAS

EAST TEXAS

PANOLA COUNTY—		
D. Thomason, Tiller 4, J. Storey sur	¶8	3188

NORTH TEXAS

ARCHER COUNTY—		
Consolidated Oil Co. & Grisham, Harmel 1	*	1477
N. D. Goldsmith & King Roy Co., Deitrich 5	70	1169
T. F. Hunter et al, Kunkel 2-B	*	1205
Wayne King et al, Portwood 2	*	1477
Lawson-Duke et al, Richardson 4	15	1424
Magnolia Pet. Co., Kunkel 7	35	1152
Perkins - Cullum - Navarro Oil Co., Wilson 1	*	1502
Roy Reeder & Kisk Oil Co., Kunkel 1	*	1194
Seitz-Comegys et al, Parkey 1	*	1504
United Prod. Co. & Perkins-Cullum, Lyles 2	*	1725
BAYLOR COUNTY—		
Consolidated Oil Co. et al, Portwood 9	*	1457
Perkins & Cullum, Howe 1		1522
COOKE COUNTY—		
Humble O&R Co., Sears 1	*	2000
Kewanee O&G Co., Milburn 1-A	*	1602
Montgomery 1	35	1201
FOARD COUNTY—		
Shell Pet. Corp., Tarver 1-B	80	2043
JACK COUNTY—		
L. C. Harper et al, Box 6	250	3151
Petroleum Prod. Co., Raley 1	120	3170
Shaw Oil Co., Box 5	100	3139
Wylie-Daniels et al, Shipley 1	*	1527
MONTAGUE COUNTY—		
Seitz-Comegys et al, Lewis 1	*	2500
WICHITA COUNTY—		
Kisk Oil Co., Waggoner Bros. 1	15	885
WILBARGER COUNTY—		
Davis Oil Corp., Waggoner 8-D	300	2675
Grayback Dev. Co., Waggoner-Bud 1	125	2676
Lion Oil Ref. Co., Waggoner 1-B	*	2501
The Texas Co., Waggoner 372	18	2286
Waggoner Ref. Co., Waggoner 4	15	1199
Waggoner 5-P	150	2671
YOUNG COUNTY—		
Madden-Hunt et al, Deitrich 2	195	1143
Perkins-Cullum et al, Deitrich 6	*	1200
Petroleum Prod. Co. & Madden, Deitrich 2	185	1141
Sun Oil Co., Deitrich 14	40	1160
Wooten & Reed, Casey 1	*	603
Casey 5	*	640

"Service On The SPOT"

"RIGHT NOW"

Yes Sir—They're on the Way!

Besides merit, of course, we realize that the oil man desires, as he requires, S-P-E-E-D. "Action" is essential, and we have built our organization in such a way that we can be ever alert and abide by our Watchword of "Quick Service." If you want a tank on your lease, "RIGHT NOW" you can get it. Say the word, and a few hours later, the tank will be on its way.

Our organization is so perfected that there is a central fabricating plant in Kansas City, in the heart of America; there are District Offices well located, and Fifty Field Stations throughout the Midcontinent, Rocky Mountain Fields, and Okotoks, Alberta, Canada—each station carrying complete stocks, and with our own trained tank crews, employed exclusively by us over on the job awaiting word from you to be on their way. Yes—without delay! (Also Sales Representation in Maracaibo, South America). And the B.S.&B. Service continues long after the tanks have been erected and are in operation.

B.S.&B. Perfection Vapor Pressure TANKS

These tanks have merit—lots of it. In fact, they are in use throughout the Oil Fields, and many have been functioning for many years. They are portable, so may be taken down and moved from place to place with a minimum of effort, time and expense.

B.S.&B. PERFECTION Vapor Pressure Tanks are made with "Service" kept in mind. They not only store the crude, but protect it, for each is like a watchdog guarding it to prevent loss by evaporation, and also to save those lighter fractions which escape when the crude is fresh from the well, and when the sun shines, when the volatility is increased.

The B.S.&B. Thief Hole Pressure Vacuum Valve protects the tank against bulging or collapsing due to excessive pressure or vacuum. This safety valve operates at 16 ounces pressure or 2 ounces vacuum and protects the tank as the tank protects the crude.

May we demonstrate or tell you more about the merit of the B.S.&B. PERFECTION Vapor Pressure Tanks and the B.S.&B. Service?

Send for a man with a plan—a catalog—or more detailed information. Just address Dept. A-17.

Send for Free Diary!
Give us your name, position, address.
Write Dept. A-17.

Black Sivalls & Bryson
INC.
BARTLESVILLE • OKLAHOMA

TEXAS PANHANDLE

Company, Well and Location	Initial Production Bbls.	Depth
CARSON COUNTY—		
Empire Gas & Fuel Co., J. W. Fields 1	2400	3232
Red River Gas Co., Bivins 3-A	¶36	2550
GRAY COUNTY—		
Danciger O&R Co., R. E. Smith 2	160	3235
McCollum et al, J. F. Meers 1	¶8	3324
Queen Oil Co., H. B. Lovett 1	*	3200
Geo. Ray et al, T. B. Noble 1	10	2912
WHEELER COUNTY—		
Murchison-Fain-McGaha et al, W. L. Cooper 1-A	†1455	

CENTRAL WEST TEXAS

BROWN COUNTY—		
Duffey et al, George 2	10	1310
Eastland Oil Co., Pierce 1	*	1350
Green, Inc. & Paramount Oil Roy. Co., Barnes 1	*	1195
Kessler et al, Bryson 1	*	425
S. B. Owens, Inc., Whiteside 5	35	1308
Rowan-Tong, Inc., George 1	*	1401
E. L. Smith Oil Co., George 32	40	1303
Syndicate Oil Corp., Wren 1	*	1353
Venmex Oil Co., Butler 1-D	*	1316
Woodley Pet. Co. et al, Kilgore 1	*	1252
CALLAHAN COUNTY—		
Holden et al, Cavanaugh 4-B	90	1650
Humble O&R Co., Jackson 1-D	*	1200
COLEMAN COUNTY—		
Acrey Bros. et al, Baker 1	*	1002
S. B. Owens, Inc. et al, Keeney 2	*	1984
Stepp & Vandevetter, Shore 2	*	963
Taylor-Link Oil Co., Stewardson 1	10	1513
Yingling et al, Pfluger 1	*	1508
COMANCHE COUNTY—		
Lone Star Gas Co., Frost 1	¶1¾	2818
EASTLAND COUNTY—		
Hoffman & Page, Lyerla 4	35	1284
ERATH COUNTY—		
Southern Union Gas Co., Koonsman 1	¶1¾	2350
KIMBLE COUNTY—		
McLean & Jamison, Cannon 1	†	1662
PALO PINTO COUNTY—		
Bob Elmore et al, Costello 1	†	2640
Stiff Oil Co., Costello 1	*	2560
TP Coal & Oil Co., Stuart 165	5	1630
SHACKELFORD COUNTY—		
A. J. Hughes et al, Green 1	*	1815
Merrick & Lamb, Mathews 5-B	*	1765
Craig Morton et al, Greene 1	*	632
States Oil Corp. & Gulf, Nail 1	*	1228
Vacuum Oil Co., Mathews 7-C	40	1158

WEST TEXAS

CRANE COUNTY—		
C. C. Duffy et al, Cowden 7	300	2501
Humble O&R Co., University 1-E	390	2960
HOWARD COUNTY—		
Otis Chalk et al, Fee 7	150	3118
Group One Oil Corp. & Conoco, Overton 2	1200	2237
Pure Oil Co., Hooks 3	35	1866
Schermerhorn Oil Co., Kloh 2	2100	2539
PECOS COUNTY—		
Amerada Pet. Corp., University 1	40	1734
Buell-Hagan-Pope, Byrne 1	¶1	1400
Cardinal Oil Co., Toborg 4	30	395
Toborg 5	30	395
Cosby Prod. & Roy. Co., Smith 3	200	1818
Southern Crude Oil Pur. Co., Tippett 1-A	160	450
Taylor-Link Oil Co., University 13	75	1725
UPTON COUNTY—		
Snowden & McSweeney Co., Hughes 3	30	2386

NEW MEXICO

LEA COUNTY—		
Penn Oil Co., State 1	*	5175

TEXAS GULF COAST

ALLEN DOME—		
Mills Bennett Prod. Co., Allen 1	750	4999
BARBERS HILL—		
Yount-Lee Oil Co., Phillips 2	825	5225
Sun Oil Co., McKinney 3	50	5295
Z. T. Wilburn 3	75	5331
BATSON—		
Paraffine Oil Co., Knight 47	3	470
DAMON MOUND—		
Layne-Texas Co., Wisdom 5	500	2332
HUMBLE—		
The Texas Co., C. O. & G. Co. 30	2400	3102
West Prod. Co., Foster Lbr. Co. 2	1650	4541
ESPERSON DOME—		
Cranfill-Reynolds Co., Esperson 4-A	500	3342
Esperson A-6	100	2325
PIERCE JUNCTION—		
Rio Bravo Oil Co., Settegast 12-A	*	5010
REFUGIO—		
Houston Oil Co., Rea 2	350	3683
Saxet Oil Co., Cable 1, Blk. 20	1000	3695
Independent O. & G., West 2	700	3677
Morgan Oil Corp., Swift 1	400	3680
Fox 1, Blk. 71	1200	3705
Houston Gulf Gas Co., Morgan-Vance 2	¶40	3692
SPINDLE TOP—		
Yount-Lee Oil Co., McFadden 75, dd	540	5100

SOUTHWEST TEXAS

DARST CREEK—		
Cranfill & Reynolds, Appling 1	*	2813
Trinity Drillers, R. Miller 1-B	100	2625
Magnolia, Dix 2	780	2620
United N. & S. Dev. Co., Dix-McKean 2-A	1260	2552
Gulf, Posey 2	840	2585
Posey 3	400	2620
Humble, Denman 6-A	840	2615
Denman 8-A	1100	2582
The Texas Co., L. Anderson 4	840	2653
Dowdy 1	550	2626
H. Willie 3	1056	2631
Humble, Tadlock 1	100	2647
SALT FLAT—		
Humble, Tiller 5-A	100	2708
New 1	175	2763
DUVAL COUNTY—		
Simms Oil Co., Dinn 8	¶30	1753
MEDINA COUNTY—		
Pearson Oil Co., S. A. Irrigated Farms 1	¶40	780
WEBB COUNTY—		
Foster Barnsley, Webster 7	75	2622
ZAPATA COUNTY—		
Blair & Cladgett, Trevino 2	360	1250

Magnolia Pipe Line Runs Increased in January

Dallas, Texas.—Withdrawal of crude from storage in Oklahoma by Magnolia Petroleum Company during January tapered off as result of a substanial gain in production and crude purchases in the above state and Texas. The company began pulling on Oklahoma crude stocks last July when the month was started off with a peak of 9,899,785 barrels, and at the close of January total stocks held in the state was reported at 7.577,975 barrels, but only 16,985 barrels were taken from storage in January.

Crude runs by Magnolia Pipe Line Company during January from Oklahoma, Texas, Louisiana, Arkansas and Kansas averaged 87,625 barrels daily, or 5396 barrels greater than the daily average maintained for December. These figures do not include the large volume of common carrier business conducted by the company for other interests. Crude runs from Oklahoma averaged 43,743 barrels daily in January, representing an increase of 3954 barrels daily, while runs from fields in Texas increased 2506 barrels on daily average to a total of 36,125 barrels daily. A slight drop in runs was reported from fields in Louisiana, Arkansas and Kansas.

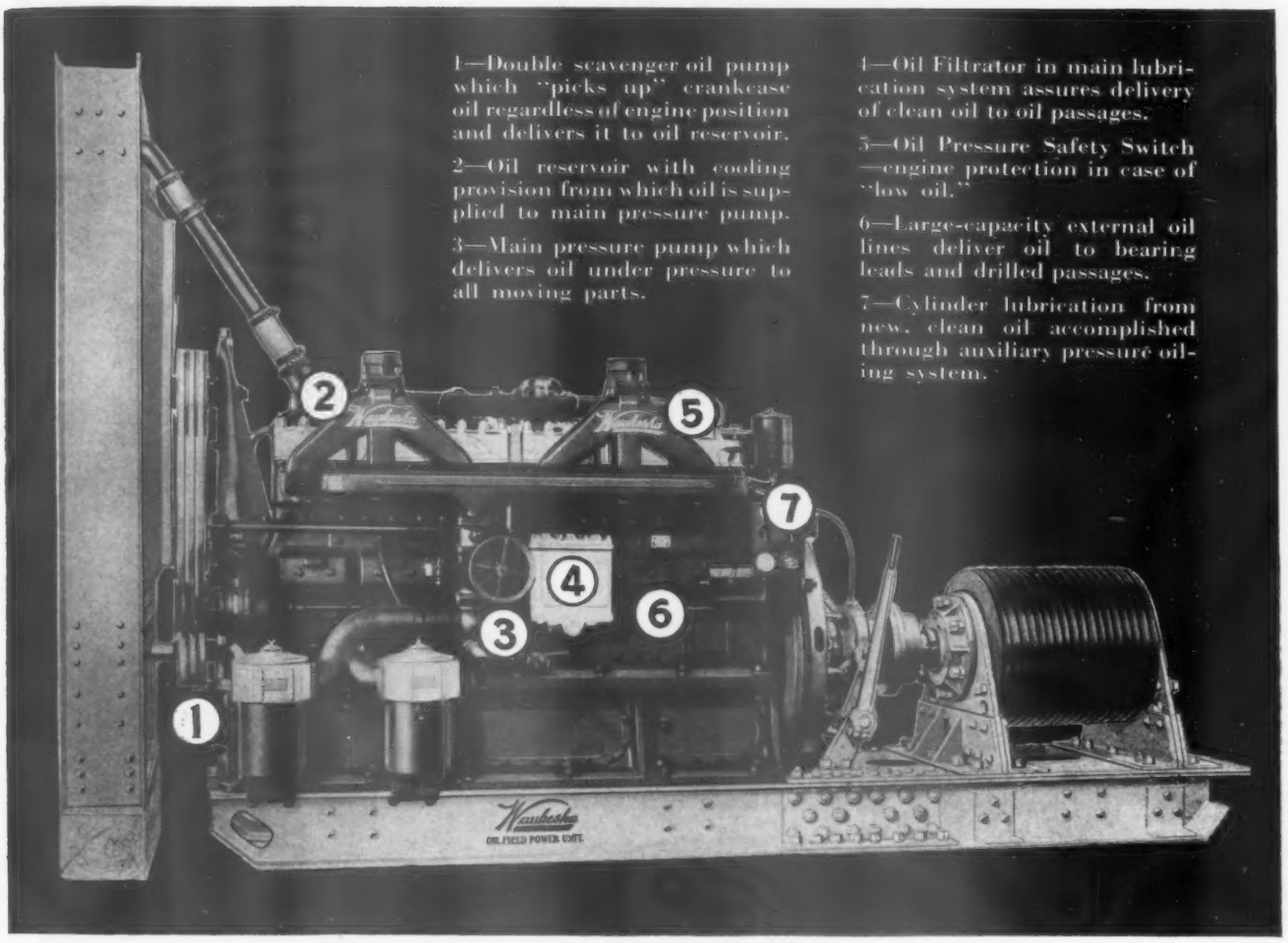
Water shipments of crude and refined products by Magnolia Petroleum Company from Beaumont were about normal during January. The company loaded out 15 cargoes of crude for coastwise movement aggregating 858,583 barrels, as compared to 806,246 barrels in December. Fuel oil shipments during January totaled 11,732,915 gallons, or a gain of 4,828,358 gallons, while a total of 48,420,954 gallons of miscellaneous refined oil products were dispatched during January for coastwise and foreign points.

Total crude runs made by the Magnolia Pipe Line Company, exclusive of common carrier business, from fields in Oklahoma, Texas, Louisiana, Arkansas and Kansas during December and January follow:

Fields—	December Totals	January Totals
Wewoka-Cromwell	544,705	564,459
Healdton	193,326	165,851
Oklahoma City	136,740	211,777
Hewitt-Graham	175,513	157,086
Cushing	100,863	91,973
Wewoka (bright stock)	.....	85,869
Seminole	41,839	42,049
Yale	40,479	36,954
Augusta (Kansas)	33,955	32,290
Total for Oklahoma and Kansas	1,267,420	1,388,308
Luling	279,097	271,110
Mirando	185,760	188,808
Panhandle	128,195	143,702
Darst Creek	2,974	110,454
Electra	77,714	73,069
Crane County	64,866	63,255
Burkburnett	61,721	56,640
Howard County (Deep)	48,715	47,609
Winkler County	58,465	43,393
Lockhart-Lytton Springs	26,310	26,494
Archer County	19,144	19,359
Mexia-Wortham	18,092	17,990
Iatan & Howard County	15,906	13,449
Desdemona-Comanche	15,969	13,422
Corsicana-Powell	10,563	7,859
Stephens County	7,476	7,397
Corsicana (Heavy)	8,419	6,598
Ranger-Olden	8,258	6,481
Petrolia-Clay County	1,883	1,110
Thrall-Williamson County	1,310	972
Panola County	1,351	693
Total for Texas	1,042,188	1,119,864
Bull Bayou	34,433	32,673
Cotton Valley	33,024	27,039
Pine Island	24,373	22,755
Hackberry	30,400	18,287
Haynesville	4,884	6,376
Total for Louisiana	127,114	107,130
Smackover	62,033	57,193
El Dorado-Rainbow	47,094	40,495
East El Dorado	3,255	3,399
Total for Arkansas	112,382	101,087
Total for five states	2,549,104	2,716,389

Colorado Gas Line

Thermopolis, Wyoming.—Ray Phebus of this place and associates have become interested with the Fulton Oil Company of Montana in laying a pipe line from Garmesa field, a distance of about 30 miles, to Grand Junction, Colorado, where a natural gas system will be installed. Work is already under way.


1—Double scavenger oil pump which "picks up" crankcase oil regardless of engine position and delivers it to oil reservoir.
2—Oil reservoir with cooling provision from which oil is supplied to main pressure pump.
3—Main pressure pump which delivers oil under pressure to all moving parts.
4—Oil Filtrator in main lubrication system assures delivery of clean oil to oil passages.
5—Oil Pressure Safety Switch—engine protection in case of "low oil."
6—Large-capacity external oil lines deliver oil to bearing leads and drilled passages.
7—Cylinder lubrication from new, clean oil accomplished through auxiliary pressure oiling system.
1
2
3
4
5
6
7
Waukesha
OIL FIELD POWER UNIT

An Engine is No Better Than Its Oiling System

MULTI-CYLINDER engine designers have ever insisted upon improved lubricants to protect quickly-moving precision parts. The quality of present-day lubricating oil testifies to the co-operation of the refiner.

Correct engine design capitalizes on good oil by providing an adequate, well-designed lubricating system giving protection to every moving part. Waukesha engineers offer the accompanying proof as evidence of a long-lived engine for exacting oil-field demands.

The Waukesha Great Six Engine for either natural gas or gasoline fuel is recommended for deep-well rotary or cable-tool drilling in either proven or "wildcat" territory.

Bulletin No. 775 and Bulletin No. 761 describe this rugged, dependable engine. Write today to *Oil Industry Equipment Division, Waukesha Motor Company, Waukesha, Wisconsin. Offices: New York, 8 West 40th Street; San Francisco, 7 Front Street.*

In the Oil Fields: C. F. Camp Co., Tulsa; Portable Rig Co., Houston; Bradford Supply Co., Bradford, Pa.; Waukesha Industrial Engine Sales & Service Co., 46 Natoma Street, San Francisco, Calif., and 749 Turner Street, Los Angeles, Calif.

313

WAUKESHA ENGINES

PERMITS GRANTED FOR NEW WELLS

WEEKLY COMPARISON OF NEW WELLS

State—	Week ending Feb. 15	Previous week	Total this month	Total this Year	This week 1929	This month 1929	1929 Year Total
Arkansas	5	..	9	20	1	7	159
California	13	13	39	96	23	116	1,231
Louisiana	12	8	33	98	8	42	903
Kansas	27	13	59	120	7	45	1,079
Oklahoma	38	31	85	333	37	171	3,578
Texas	117	118	315	967	120	518	8,697
Total	212	183	540	1,734	196	900	15,647

LOUISIANA

CADDO PARISH — Calatex O. & G. Co., Shreveport, Taylor-Trosper 1, 7-16n-16w, 1292.94 ft e of State Line and 130.68 ft n of s line of section. Gulf, Shreveport, Levee Board A-24, 34-21n-16w, 200 ft s and 200 ft w of ne c sw nw. The Texas Co., Shreveport, Levee Board 73, 27-21n-16w, 1642 ft e and 788 ft n of sw c se. Triangle Drilling Co., Shreveport, Hardy et al, 1, 18-19n-16w, 660 ft n and 660 ft w of se c of Frac. Sec.

CALCASIEU PARISH—Vacuum Oil Co., Houston, Miller 27, 9-10s-9w, 150 ft s and 250 ft w of ne c se nw.

MOREHOUSE PARISH — J. B. Bond, El Dorado, Ark., Haynes 1, 22-21n-5e, 400 ft n and 400 ft e of sw c sec.

RICHLAND PARISH — Southern Carbon Co., Monroe, H. Lindow 1, 16-16n-6e, 3300 ft w and 1320 ft s of ne cor of Section.

SABINE PARISH—Mr. Zeke Lohman, Tr., Many, Wyatt Lbr. Co. 1, 18-4n-11w, 150 ft s and 300 ft e of nw c ne sw. Paramount O. & G. Corp., Hammond, Woollum 1, 11-6n-12w, 160 ft n and 400 ft w of se c ne nw.

ST. LANDRY PARISH — Gulf, Houston, W. H. Hoskins A-2, 4-6s-5e, 1252 ft s, 30°30 ft w from n or nw c Gulf Refg. Co. 110 acres W. H. Hoskins "A" Lse. and thence S.60°0 ft e 747 ft to loc.

TERREBONNE PARISH—The Texas Co., Shreveport, State-Dog Lake 2, 5-22s-16e, 4626 ft s and 185 ft e of nw c of sec.

WEBSTER PARISH—Meredith & Merritt, Monroe, H. H. Boucher 1, 17-23n-11w, 200 ft n and 200 ft e of sw c se se.

ARKANSAS

POPE COUNTY—Ark.-La. Pipe Line Co., G. H. Crutcher 1, 14-9n-21w, 330 ft s and 450 ft e nwc ne nw.

UNION COUNTY—Malloy & Co., G. H. Goodwin 4, 36-17-16, 200 ft n and 200 ft e, swc ne ne. Wilson & Chapman, W. R. Bradley 2, 2-16-16, 330 ft n and 330 ft e swc Lot 3, nw. Wilson & Chapman, Special School Dist. No. 46, 1, 9-18-13, Spl. Schl. Dist. 46, ne ne se. Malloy & Co., Murphy 1, 1-18-16, 150 ft s and 150 ft w nec se ne.

OKLAHOMA

CADDO COUNTY—Ramsey Pet. Co., Jones 1, nw sw se, 31-6n-9w.

CARTER COUNTY—Prairie, McCartney 2, se nw se, 30-1s-3w; McCartney 3, ne nw se, 30-1s-3w. Magnolia, Hightower 5, se sw ne, 30-1s-3w; Putnam 3, se ne sw, 30-1s-3w.

CREEK COUNTY — Empire, Bigpond 4, nw c sw nw, 36-15-7e.

GARFIELD COUNTY — Champlin O&R, Gibson 1, sw c se se, 25-24-4w.

HARPER COUNTY—Empire, Bruce 1, sw c ne ne sw, 12-25-20w.

HASKELL COUNTY — Midwestern Oil & Gas, Polster, c ne se, 33-10-22e.

JEFFERSON COUNTY — Prairie, Seay 2, sw ne sw, 34-6s-5w.

KAY COUNTY—Empire, Maple 1, sw c, 20-27-4e.

MUSKOGEE COUNTY — Bryan Pet. Co., Rolland 1, nw c sw, 19-16-16e. John Aggas, Wheat 3, cnl se sw 28-16-15e. C. D. Bradley, Robinson 1, ne c sw se 20-15-19e.

OKFUSKEE COUNTY—Prairie et al, Day 1, sw c, 4-13-10e. Atlantic, Jackson 1, nw c sw 35-11-11e. (owdd).

OKLAHOMA COUNTY — Cromwell-Franklin Petroleum Corp., Thompson 2, sw c ne, 15-12-3w. Indian Territory Illuminating et al, Trosper 11, sw nw sw, 13-11-3w. Villines and Smith, Spangle 1, ne nw ne, 15-11-3w. Citizens Oil Syndicate, Sage-Barker 1, ne c 21-11-3w.

OKMULGEE COUNTY—I. M. Levine et al, Warner 2, nw c se nw 24-14-12e (owdd). J. L. Selby, Flint 2a, csl ne nw 26-14-14e.

POTTAWATOMIE COUNTY—Osage Indian Dev. Co., Townlot 1, sw ne sw 8-9-5e. Continental Oil Co. et al, Brandenburg 3, ne se se 34-8-4e.

SEMINOLE COUNTY — Carter Oil Co., Campbell 5, nw sw sw, 20-9-6e. Tidal Oil Co. and Interocean Oil Co., Lasley 5, ne se se, 19-9-6e. Amerada Pet. Corp. et al, Grounds 1, sw nw nw 23-9-5e. Prairie, Smith (twin) 5, se ne sw, 5-7-7e. Prairie, Smith (twin) 6, ne se sw, 5-7-7e. Prairie, Grounds 1, nw c ne, 23-9-5e. Prairie, Griffin 2, ne se ne, 17-6-6e. Prairie, Anders 1, nw c 23-6-6e. Magnolia Pet. Co., Carbitcher 1, se c sw, 14-9-5e. Denver Producing & Ref. Co., Carbitcher 1, sw nw se, 14-9-5e. Gypsy, Carbitcher 1, sw nw se, 14-9-5e. Gypsy, Carbitcher 1, sw c se, 14-9-5e. Barnsdall Oil Corp., Johnson 1, ne c se, 17-6-6e.

STEPHENS COUNTY — Pelwin Oil Co., Perdy 1, nw ne ne 3-1s-9w.

TULSA COUNTY—A. G. Cory et al, Rentie, ne c nw, 31-19-10e.

KANSAS

BUTLER COUNTY—Nathan et al, Hamilton 1, ne nw nw 14-28-6e. Johnson et al, Slabaugh 1, ne c sw, 10-28-6e. Empire, Brandenberger "A" 7, se c ne, 22-27-5e. Ramsey et al, Wilkinson 1, se c nw, 25-24-3e. Empire, Semisch 1, nw se sw, 33-27-7e.

ELK COUNTY—National Ref. Co., Shambaugh 1, sw ne ne, 21-28-9e.

ELLIS COUNTY—Phillips Pet. Co., Owen 1, se c sw, 32-11-17w. Phillips Pet. Co., Ruth 1, se c nw, 32-11-17w. Phillips Pet. Co., Clinton 1, se c nw, 5-12-17w. Central Commercial Oil Co., Helms 1, se c ne, 2-12-20w.

GREENWOOD COUNTY — Shull Drilling Co., Allis 2, nw se nw, 17-24-13e. Alladin Pet. Co. and Phillips Pet. Co., Jones 1, ne se nw, 36-24-10e. Derby Oil Co., Biggs 1, ne c se, 36-24-10e. Kansas Oil Corp., Stanhope 1, ne nw ne, 18-26-9e.

HARVEY COUNTY — Jolly-Ogg Pet. Co., Schowalter (owdd) ne c 11-24-13. McPherson O&G Dev Co., Haury 2, c se se 11-23-2w. McPherson O&G Develop. Co., Palmer 1, c sw nw, 36-22-2w.

McPHERSON COUNTY—Shell Pet. Corp., Koehn 1, ne nw ne, 16-21-3w. Prairie and Tom Slick, Stuckey 3, ne nw sw, 10-21-3w. Wentz Oil Corp., Sperling 1, ne se sw, 9-21-3w. Independent, Sperling 2, se ne sw, 9-21-3w. McPherson O&G Develop. Co., Rudigerk 1, c ne 26-20-2w. Ben Gurley et al, Johnson 1, sw c 17-18-2w.

MORTON COUNTY—Argus Gas Co., Armstrong 1, cnl s½ n½ nw, 16-34-39w.

RUSSELL COUNTY — Mid West Exploration Co., Dortland 36, se c 5-14-15w.

SEDGWICK COUNTY — Continental Oil Co. and Gypsy, Reed 8, nw sw se, 1-26-1w.

STEVENS COUNTY — Argus Gas Co., Smith 1, c sw 13-33-37w. Argus Gas Co., Parker 1, c sw 19-34-36w.

CALIFORNIA

ELWOOD — Pacific Western Oil Co., Goleta 2, 15-4-29. Bolsa Chica Oil Corp., Security 1, 24-4-29; Taylor 1, 23-4-29.

FRESNO COUNTY—Western Gulf Oil Co., Lillis-Welsh 1, 26-15-12.

KERN COUNTY—H. A. Bardeen, Ramsey 1, 10-10-23; Klipstein 1, 18-10-23. Helen Pet. Corp., Ltd., No. 1, 23-25-27.

LONG BEACH—Petroleum Properties, Inc., No. 1, 33-4-12.

MIDWAY—Honolulu Consolidated Oil Co., No. 51, 8-32-24.

NEWHALL—Pioneer Pet., Ltd., No. 1, 14-3-16.

RINCON—C. C. M. O. Co., Hobson C-6, 17-3-24.

SANTA BARBARA COUNTY—Exeter Oil Co., No. 1, 32-4-25.

VENTURA—Associated Oil Co., V. L. W. 9-A, 23-3-23.

TEXAS

Operator, Lease or Owner, Acreage, Well, Survey, Distance to lease lines or well.

BROWN COUNTY — Arcadia Ref. Co., Brownwood, A. V. Trueheart, 40, 3C, S 638, M. B. Lamar sur, sw corner. P. K. French, Fort Worth, Fry, 50, 1, S 36 HT&B sur 150 ft from s and w lines. H. A. Beasley, Brownwood, B. S. Bryson, 80 1, No. 4 W. Ahrenbeck sur, 625 ft from e and 900 ft from s line. Mac T. Anderson, Rising Star, W. B. Trammel, 161, 4, F. B. Stewart sur, 200 ft from e and 750 ft from s line.

BEXAR COUNTY—Penn Tex Oil Co., San Antonio, P. Dobrowolski, 67, 1, Sec. 4, No. 52 sur, 150 ft from s and e lines. W. H. Wallace, Corpus Christi, F. Dulling, 313 2, J. Esquod sur, 450 ft from se and 250 ft from s line.

CALLAHAN COUNTY—Sample & Berry, Putnam, R. D. Williams, 622 1, T. M. Alvord sur, 155 ft from n and 150 ft from w line. H. H. Adams, Fort Worth, H. Wagley, 80, 16, S 2, D&D Asy sur, 150 ft from n and e lines. Moutray Oil Co., Abilene, P. G. Hatchett sur, 320, 5, S 20, D&D Asy sur, 300 ft w of No. 4. Gilman & McMurray, Cisco, G. M. Slaughter, 120, 1, S 7, D&D Asy. sur, 150 ft from n and w lines. L. G. Bradstreet Co., Fort Worth, J. A. Miller, 111, 15, B 98, CCSL sur, 150 ft from s and e lines. H. H. Adams, Fort Worth, Z. C. Wagley, 30, 1, S 2, D&D Asy. sur, 150 ft from s and e lines. H. Wagley 80, 17, S 2, D&D Asy. sur, 300 ft from n and e lines. Ben Welch, Cross Plains, W. H. Coppinger, 46, 1, No. 777 W. G. Anderson sur, 150 ft from n and e lines. Moutray Oil Co., Abilene, P. G. Hatchett, 320, 6, S 20, D&D Asy. sur, 2220 ft from e and 450 ft from s li sec. Humble, Cisco, I. N. Jackson 160, F1, S 2, C&M sur, 750 ft from s and 150 ft from w line.

COLEMAN COUNTY—Tidal Oil Co., Fort Worth, J. L. Stewardson, 80, 3, S 91, E.T. Ry. sur, 390 ft n of No. 2. Jamison, Pollard & Forster, Coleman, B. Lynch, 143, 1, No. 279, Wm. Farris sur, 5000 ft from w and 2158 ft from s li sur.

CLAY COUNTY—Saxet Gas Co., Petrolia, D. S. Ross, 6, B 27, PCSL sur, 460 ft from n and 150 ft from w line. Reno Oil Co., Wichita Falls, B. Nutter, 150, 1, B 51, OCSL sur, 818 ft from n and 209 ft from w line. Saxet Gas Co., Petrolia, J. Sine, 2, S 3, B 1, PCSL 150 ft from n and w lines.

CARSON COUNTY—Dixon Creek Oil Co., Amarillo, Blach, 40, 2 S 112 B 4, 1&GN sur, 330 ft from n and w line ne¼ of nw¼.

CHAMBERS COUNTY — Yount-Lee Oil Co., Beaumont, Chambers County Agricultural Co., 12, Wm. Bloodgood sur, 355 ft from n and 1660 ft from w line; 13, 650 ft from n and 1660 ft from w line. Sinclair, Houston, J.

2 new time-savers *for* your rigs

PARKERSBURG
STEEL DERRICK

Built to A. P. I. Standards

An easily erected Derrick with rigid strength for today's and tomorrow's deep drilling.

Ask Our Representative

TYPE "HB" PITMAN

Just lift the simple boomer lever on this Parkersburg Pitman and the bearing opens up like a politician's mouth —wide. In just thirty-nine seconds you can take it off the wrist pin and set it down—pick it up and put it on again. Its greater convenience and easy handling saves time and fingers.

The Patented Self-aligning, Self-lubricating Bearing eliminates wrist pin troubles for all time.

Like other Parkersburg all steel equipment, this "HB" Pitman is built for lifetime service drilling or pumping.

See our representative today. You will want this improved Pitman on your next Rig.

by

TYPE "ICR" WALKING BEAM

"ICR" means "Center Rocker"—a new principle, a longer straight stroke, an oil-less, more business-like Steel Walking Beam, by Parkersburg.

Chiefly this improved Beam brings you better operation with less attention. The minute you install it you can forget side sway and weaving for this beam rocks smoothly from its center. The Temper Screw Bearing on the same horizontal line with Rocker center gives a stroke with but a fraction of the deflection of the ordinary Walking Beam. In addition there's strength for any service.

The ICR Type Beam is made in three lengths to meet your requirements. Irons fit any A.P.I. drilled Sampson Post.

To save time, call the nearest Parkersburg Representative.

Parkersburg

The PARKERSBURG RIG and REEL Co.
PARKERSBURG, W. VA. and Branches

THE PARKERSBURG RIG AND REEL CO. PARKERSBURG WEST VIRGINIA QUALITY SERVICE MADE IN U.S.A.

Trade Mark Reg.

Wilburn, 52, 5, Griffith-Hodges sur, 100 ft sw of No. 4.

COOKE COUNTY — Danciger O&R Co., Fort Worth, J. W. Mount, 40, 1, J. L. Walters sur, center.

COMANCHE COUNTY—Producers & Contractors Corp., Lockhart, N. J. Cogburn, 200, 1, B 20, J. P. Stephenson sur, 687 ft from n and w lines.

DUVAL COUNTY—Allied Gas Co., Inc., Laredo, W. R. Peters, 160, 2, Sec. 161, sur, 560 ft from w and 660 ft from s line nw¼.

ECTOR COUNTY — C. P. Davis, Odessa, T. G. Hendrick, 160, 1, S 46, B 42, T&P sur, center of sw¼.

FRIO COUNTY—F. B. Lefevre, San Antonio, Eschenburg, 1, No. 789, E. Gallagher sur, 3980 ft from e and 1320 ft from n li sur.

FORT BEND COUNTY — Sinclair O&G Co., Houston, B. Blakely, 1, J. Lafayette sur, 312 ft n of center of s line.

GUADALUPE COUNTY — Adams, Lyles, North & Walton, San Antonio, M. Hoffman, 114, 1, 150 ft from n and w lines. Humble, Houston, L. G. Denman, 300, A9, A. S. Emmett sur, 800 ft from s and 300 ft from ne line; A-10, 1100 ft from s and 1250 ft from w line. S. Wilson, 50, 4, J. C. Darst sur, 983 ft from w and 150 ft from n line; 5, 800 ft from n and 1050 ft from e line. A. E. Dowdy, A, 146, 2, J. C. Darst sur, 150 ft from s and 1050 ft from e line.

GRAY COUNTY—Adams McGavey & Osborne, Amarillo, J. S. Morse, 160, 2, S 2, B 26, H&GN sur, 330 ft from n and e li n½ of se¼; 3, 330 ft from n and w li s½ of ne¼.

HARRIS COUNTY—South Texas Pet. Co., Houston, R. B. Morris, 100, 14, W. T. Charles sur, 275 ft e of No. 6. N. Lee, 88, 3, Sec. 1, Rhule sur, 183 ft from n and 100 ft from e line. Cullen & West, Houston, R. E. Burt, 100, 2, Stevenson sur, 471 ft from w and 350 ft from s line.

HARDIN COUNTY — Ada Belle Oil Co., Batson, Wm. Weise, 13, 133, Blk. 8, lot T, C. Choate sur, 122 ft from s and 22 ft from e line. Paraffine Oil Co., Houston, Knight, 47, Knight sur, 128 ft from e and 51 ft from s line. Rio Bravo Oil Co., Houston, Fee, 158, C8 9B, J. F. Cotton sur, 4 ft s of No. C89.

HAYS COUNTY—Jno. H. Foster, Davenport, Ia., W. G. Barber, 146, 3, No. 4, Z. Hinton sur, 270 ft from se and 850 ft from nw line.

HOWARD COUNTY—Continental Oil Co., Wichita Falls, Chalk, C, 160, 7, S 140, B 29, W&NW sur, 1985 ft from n and 200 ft from w li ne¼. California Oil Co., Forsan, D. Roberts, 80, 6, S 136, B 29, W&NW sur, 205 ft from w and 150 ft from n line

HUTCHINSON COUNTY — Phillips Pet. Corp., Bartlesville, Okla., G. R. Katz, 80, 2, S 35, B Y, A&B sur, 294 ft from s and w li e½ of sw¼; J. Burl, 80, 1, S 4, B 1, B&B sur, 330 ft from n and e li nw¼ of ne¼; J. R. Royal, 80, 1, S 34, B Y, A&B sur, 294 ft from n and w li e½ of nw¼; M. Johnson 80, 2, S 34, B Y, A&B sur, 292 ft from n and e li w½ of nw¼. Danciger O&R Co., Fort Worth, R. F. Cheatham, 40, 1, S 38, B Y, 33 ft from n and li sw¼ of se¼. Midwest Explo. Co., Amarillo, Pitcher, V, 80, 1B, S 19, B M21, T. C. Ry. sur, 330 ft from s and e li w½ of sw¼. Texas Co., Wichita Falls, E. J. Moore, 160, 5, S 125, B 4, I&GN sur, 330 ft from e and e li of sw¼.

IRION COUNTY—Baker, Hedges & Irion Oil Co., Brownwood, F. Tankersley, 40, 1, S 23, GC&SF sur, 750 ft from n and 170 ft from w li sec.

KENDALL COUNTY—P. B. Sterling, San Antonio, W. Werner, 1, S 781, J. F. Torrey sur, center.

MAVERICK COUNTY—Rycade Oil Corp., Houston, D. L. Sullivan, 5, S 82, B 7, I&GN sur, 3000 ft from e and 1260 ft from s li sec. A. E. Chittim, 6, S 116, B 7, I&GN sur, 1000 ft ne of No. 3.

MEDINA COUNTY — F. E. Tegler, San Antonio, J. P. Nixon, 40, 6, No. 14 J. G. Durst sur, nw corner.

NAVARRO COUNTY—G. C. Kent, Corsicana, C. W. Lockhart, 101, 10, RCSL sur, 300 ft sw of No. 9.

PECOS COUNTY—Geo. D. Morgan, Fort Worth, F. E. Toborg, 320, 1, S 539, A&B sur, 330 ft from s and e lines of w½; 2, 150 ft from e and 750 ft from s li of w½; 3, 714 ft from e and 150 ft from s li of w½; 4, 150 ft from s and e lines of w½; 5, 150 ft from s and 432 ft from e li of w½. F. E. Toborg, 320, 1A, S 539, A&B sur, 475 ft from e and 291 ft from s li w½. Skelly Oil Co., Tulsa, Okla., F. Bowers, 80, 2, S 31, B 16, Univ. sur, 330 ft from n and w lines of se¼. Transcontinental Oil Co., Tulsa, Okla., M. A. Smith, A, 640, 1, S 11, B 104, GC&SF sur, 2310 ft from n and 1290 ft from e li sec. J. C. Matthews, 640, 2, S 10, B 194, GC&SF sur, 660 ft s of No. 1; 3, 990 ft w of No. 1. White-Baker, 2, Sec. 8, Blk. Z, TC Ry. sur, 990 ft from n and 2310 ft from e li sec.

POTTER COUNTY — Canadian River Gas Co., Amarillo, R. B. Masterson, 80, 1, S 17, B 3, I&GN sur, 330 ft from e and 1320 ft from s line of sec.

PARKER COUNTY—Bascom Waters, Mineral Wells, J. W. Davis, 320, 1, Sec. 2550, 240 ft from n and 1386 ft from e line.

REFUGIO COUNTY—Million Drilling Co., San Antonio, V. Bailey, 2½, 1, Blk 91, Refugio sur, center of blk 91. Moss-Powers, 2½, 1, Refugio sur, center of blk 110. Larco Gas & Pet. Co., San Antonio, G. Strauch, 13, 3, Refugio, Blk 6, 65 ft from w and 150 ft from s line. G. Strauch, 40, 1, Blk 6, Refugio, 60 ft from w and 200 ft from s line. Houston Oil Co., Houston, Moss-Heard, 1, Refugio sur, 150 ft from n and 166 ft from e line blk 111. W. M. Dougherty, 1, Refugio sur, 150 ft from s and w lines of blk 23. F. B. Rooke, 200, 14, T. Mullen sur, 200 ft from n and w lines. E. M. Jones, San Antonio, I. R. Jeter, 2, 1A, Refugio sur, 150 ft from n and e line of blk 10. Blanco Creek Oil Corp., Refugio, W. Dammann, 140, 1, S 16, E. Lopez sur, 150 ft from n and w lines of nw¼.

RUNNELS COUNTY—Gibson & Johnson, Abilene, D. O. Johnson, 80, 1, S 150, E. T. Ry sur, 330 ft from n and e lines of se¼.

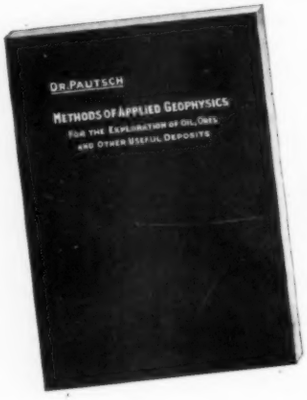
SHACKELFORD COUNTY—A. D. Robinson, Dallas, Blach, 320, 19, 372, TE&L sur, 1040 ft from nw and 615 ft from sw line of sec. E. J. Stump, Wichita Falls, Brewster, 120, 1, S 48, Blind Asy. sur, 150 ft from n and w lines. F. C. Morton, Albany, W. H. Green, 1, 815, TE&L sur, 1717 ft from nw and 783 ft from ne line of sec. J. W. Radcliffe, Moran, R. E. Collingsworth, 40, 3, S 13, Univ. sur, 1470 ft from w and 450 ft from s line. F. W. Peckham, Stamford, O. L. Barclay, 40, 1, Sec. 2, Blind Asy. sur, 150 ft from n and 550 ft from e line sw¼.

STEPHENS COUNTY—Phillips Pet. Corp., Bartlesville, Okla., I. Sike, 85, 1, S 13, B 6, T&P sur, 350 ft from e and 510 ft from n line.

THROCKMORTON COUNTY—F. D. Addison, Bryson, A. J. Woods, 40 1, 697, TE&L sur, 2130 ft from w and 150 ft from s line. Ewmo Oil Corp., Abilene, J. E. Hughes, 40, 9, S 902, TE&L sur, 150 ft from s and w lines of e½ of ne¼. J. T. Odell, 40, 3, 695, TE&L sur, 150 ft from e and 460 ft from n line s½ se¼. J. E. Hughes, 40, 8, 902, TE&L sur, 155 ft from n and w line of e½ of ne¼. J. W. Robinson, Woodson, Molack, 80, 2, 908, TE&L sur, 450 ft from w and 150 ft from s line. R. R. Reynolds, Nugent, J. S. Gilbert, 29, 1, 688, TE&L sur, 172 ft from w and 450 ft from s line. C & B Oil Co., Breckenridge, H. H. Horton, 80, 1, 915, TE&L sur, 150 ft from n and e line of sec. K. Leathers, 80, 2, 934, TE&L sur, 2516 ft from e and 150 ft from s line of sec. J. T. Odell, 80, 7A, 695, TE&L sur, 150 ft from n and e line of sec. J. E. Hughes, 40, 5B, 902, TE&L sur, 150 ft from e and 450 ft from s line of sec. J. E. Hughes, 40, 4B, 902, TE&L sur, 150 ft from s and e line of sec. B. O. Fry, 80, 1, 981, TE&L sur, 150 ft from s and e line of sec.

VAN ZANDT COUNTY—Texas Chief Oil & Royalty Corp., Dallas, W. P. Foster, 151, 1, B 204, F. Montgomery sur, 600 ft from s and w lines.

WICHITA COUNTY—C. A. Everts et al, Wichita Falls, M. Fowler, 120, B 81, RRVL sur, 150 ft s of center of n line. Humble, Wichita Falls, Taylor, 110, 21, B 81, WVFL. Coppeck & Coleman, Iowa Park, Kemp & Kempner, 26, 24, B 82, HT&B sur, 50 ft n of



Methods of Applied Geophysics

For the Exploration of Oils, Ores, and Other Useful Deposits.

By

DR. ERICH PAUTSCH, *Geophysicist*

It is the purpose of this work to give a short, concentrated presentation of the results of theoretical and experimental research in applied geophysics. It gives to the physicist the principle of the geophysical methods, and will interest and incite him to specialized study. It affords all those who are already working in one or another geophysical branch, an insight into all geophysical methods.

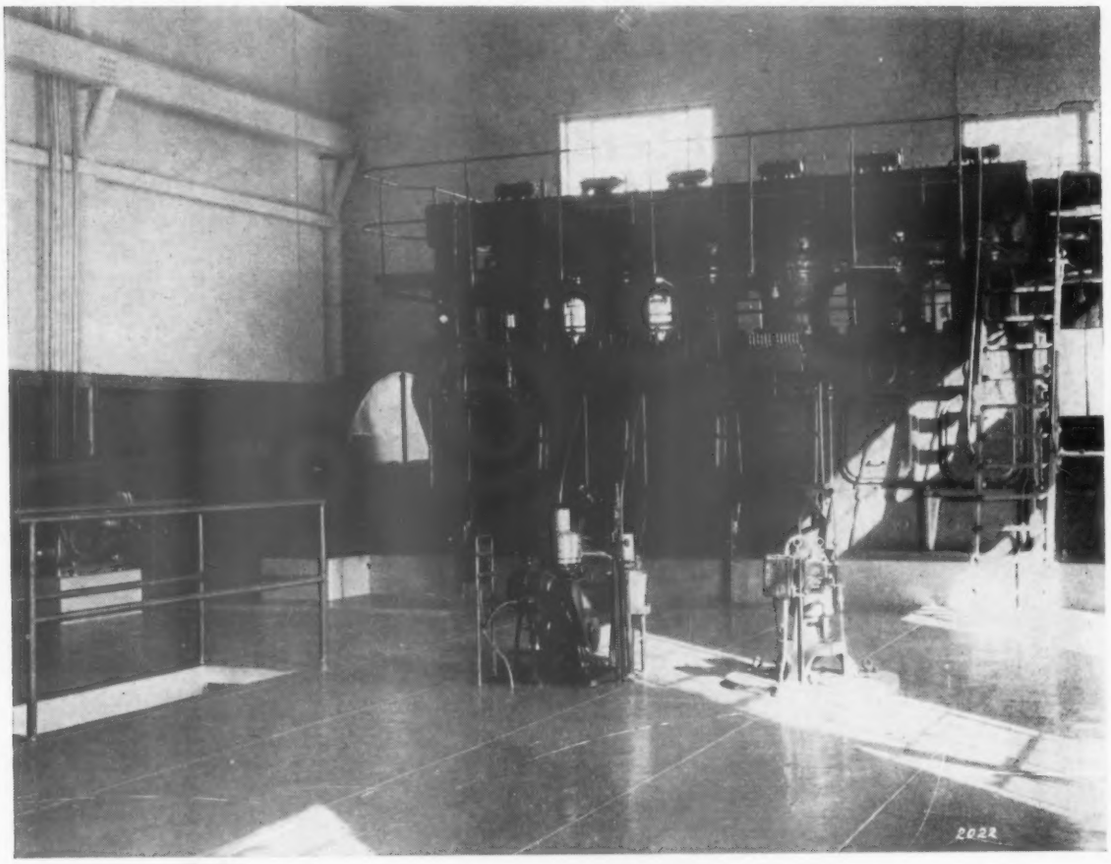
Complete with formulas and graphically illustrated. 82 pages, paper binding.

Price, $6.50, Postpaid.

Send check to

THE GULF PUBLISHING COMPANY

P. O. Box 1307, Houston, Texas



600 H.P. SOLID INJECTION DE LA VERGNE PIPE LINE INSTALLATION

De La Vergne Diesels

in the

Petroleum Industry

The simplicity of operation and low maintenance cost of the DE LA VERGNE SOLID INJECTION DIESEL in this major industry are proven by more than 125 repeat orders from 23 customers in this field.

More than 530 engines totaling over 105,000 H.P. are today proving the merits of DE LA VERGNE SOLID INJECTION DIESEL ENGINES over any other kind of prime mover for this exacting service.

I. P. Morris & De La Vergne, Inc.

RICHMOND & NORRIS STS. -:- PHILADELPHIA, PA.

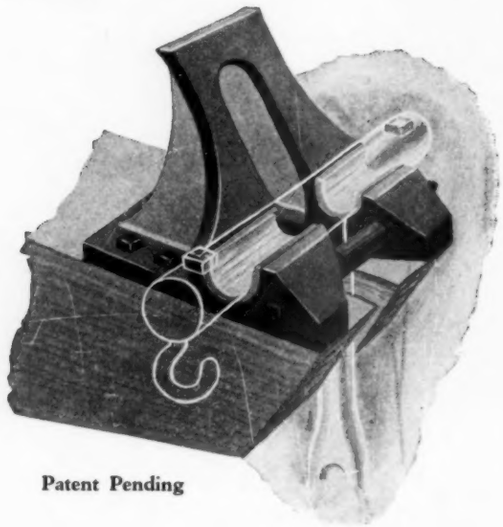
BURNS—A *Name That Has Always Stood for Highest Quality*

BURNS

Tubular Temper Screw

Ball retaining type washer keeps ball in place

THE standard in cable tool drilling in every field. Used on the world's deepest wells and by the world's largest companies, in every land where oil is found.



Patent Pending

This same BURNS

Quality is in this new product

THE BURNS BEAM BEARING

for Temper Screws, saves the beam and makes unnecessary the practice of *half-soling*, or nailing a block of hardwood to the beam head. A *Safety first* device as it is impossible for Temper Screw to jump out.

No working parts, nothing to get out of order. Babbitt bearings prevent wear on the temper screw head. For sale by your Supply Store, write for prices.

BURNS *Tool Company*

OKMULGEE - OKLAHOMA

No. 1. J. A. Duke, Burkburnett, N. Gray, 40, 15, DL&C sur, 300 ft w of No. 1. R. R. Clark et al, Wichita Falls, B. F. Brickley, 400, 1, S 2, C&M sur, 1950 ft from n and 2383 ft from e line of sec.

WARD COUNTY—J. E. Smith, Grand Falls, G. Clements, 30, 1, S 7, B 32, H&TC sur, ne corner.

WOOD COUNTY—Westexas O. & G. Corp., Fort Worth, Orphanage, 80, 1, No. 43, C. E. Ribers sur, 250 ft from s and e lines.

WEBB COUNTY—Geo. S. Marshall, Laredo, Webster, 40, 2, Sec. 684, 150 ft from s and e lines.

WINKLER COUNTY — Humble, Wichita Falls, J. B. Walton, B, 320, B3, S 47, B 16, 1860 ft w of No. 1. Shell Pet. Corp., Dallas, E. W. Cowden, 160, B1, S 39, B B5, 660 ft from s and w lines of sw¼.

YOUNG COUNTY — King Royalty Corp., Wichita Falls, C. F. Kunkel, 11, 5, S 4, BBB&C sur, 308 ft w of No. 1.

ZAPATA COUNTY—O. W. Killam, Laredo, R. B. Cuellar, 80, 20, J. M. Pereda sur, 375 ft se of No. 1. R. F. Blankenship, Laredo, G. T. Montgomery, 40, 2, Sec. 64, Blk 7, 15 0ft ft from n and 820 ft from e line. Killam & Duggan, Laredo, E. Cuellar, 640, 12, S 276, AC Ry sur, 395 ft from n and 150 ft from w line of sec.

Engineers to Discuss Field Problems at Exposition

Los Angeles.—Deep drilling and production problems are to be discussed at the two-day conference of field men and petroleum engineers of the Oil Equipment and Engineering Exposition to be held March 20 and 21 in the Shrine Auditorium. The meetings will be sponsored by the Division of Development and Production engineering of the American Petroleum Institute, and will be in charge of Wendell Jones and A. C. Rubel.

The exposition, designed as a clearing house for information relating to improved methods and practices, will present specimens of all tools, equipment and supplies placed on the market recently, or those about to be marketed, in the regular exhibition booths. Exhibits include: collections of bits of various kinds; well-surveying instruments; geophysical prospecting devices; geological and field surveying instruments; coring tools for cable and rotary systems; and specimens of the hard-surfacing materials that have come into such general use recently. Space near the exhibit hall has been taken by derrick equipment companies, and several derricks of different types and material will be on display.

Following the program and discussion, which includes four papers on straight hole drilling and four on casing, the annual election of officers will take place.

Santa Barbara, Calif.—Rated as one of California's most important fields, the Elwood area will continue to be quiet until overproduction in other critical fields is remedied. More than a dozen wells which would have been drilled under the original program were either shut down or were not started as the result of the curtailment program in effect. Pier drilling of ocean permits and offsets on the mainland leases threatened to raise production to a very high figure, but the timely inauguration of the conservation plan interceded and checked the rapid climb. There are only four active drilling wells in the field, with more than twice as many shut down.

TRUE TO ITS NAME

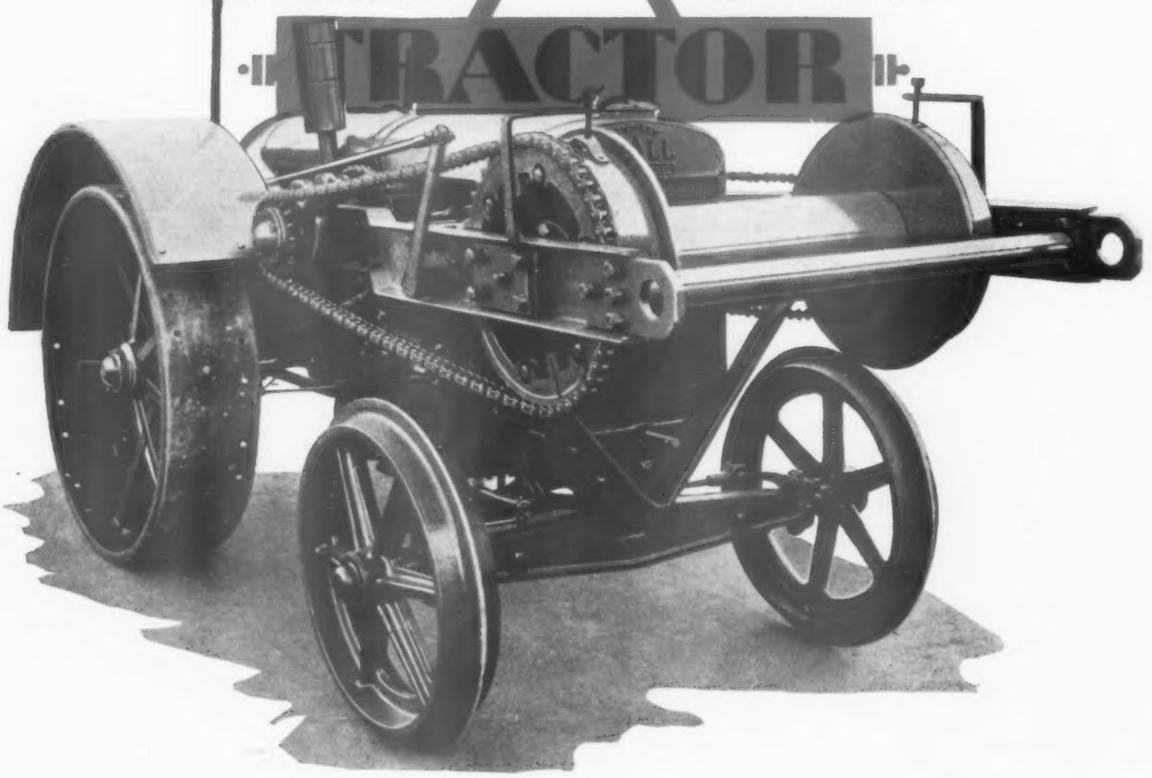
WHEREVER YOU USE IT ...

the RUMELY

DOALL

Industrial Winch

TRACTOR



— is now available in larger quantities.....

ON the lease or at the refinery, the Rumely DoAll Industrial Winch Tractor is a compact, strong and speedy worker. It will handle any job for which you do not feel the absolute need of the big, heavy-duty Rumely OilPull master tractor. Steadily increasing factory production makes DoAlls available now in larger quantities.

The Rumely DoAll Industrial Winch Tractor is a compact, ruggedly built, four-cylinder machine, using a chain drive, driven direct from the main drive wheel shafts, on both sides, eliminating any possible chance of side-strain from auxiliary transmissions—and all unnecessary parts. There are four speeds forward and two reverse, giving exceptionally high speed of line travel, also tremendous lifting power. Ample brakeage is provided, for any size job.

The DoAll turns in its own length and steers easily with one hand. Few levers, within close reach, simplify manipulations. It is smooth running and speedy on the road and at the well. Those who are familiar with the masterly performance of the OilPull Tractor will recognize its true companion in the DoAll.

—Send all inquiries and orders to - - -

FRED E. COOPER

Special Rumely Representative and Developer of Oil Field Machinery

18 S. MADISON TULSA, OKLA.

WILDCATS FROM ALL SECTIONS

WEST TEXAS

Completions

Company, Well and Location	Initial Production Bbls.	Depth
FISHER COUNTY—		
Mid-Kansas & Phillips Pet. Co., Stephenson 1-A	*	4220
Roeser-Pendelton & Amerada, Waco Bank 1	*	3225
IRION COUNTY—		
Carl G. Cromwell et al, Fuller 1-A	*	1503
JONES COUNTY—		
F. E. Shaheen et al, King 1	*	2204
PECOS COUNTY—		
Ed. Bateman & Co., Cordova 1	*	1855
Freeman & Miller Pecos Valley 1		1724
Phillips Pet. Co., Byrne 1	*	1575
TERRELL COUNTY—		
Mrs. J. B. McPhee et al, Sam Belt 1	*	880
WARD COUNTY—		
Mid-Continent Pet. Co., Conway 1	*	3415

ANDREWS COUNTY—Deep Rock Oil Co. et al's A. R. King 1, sp; B. L. King 1, rig; W. J. Mathis 1, rig. Fuhrman Pet. Corp.'s W. T. Ford 1, lcn.

BORDEN COUNTY—W. A. Moncrief & Humble O&R Co.'s Munger 1, elev 2433 ft, top salt 1090 ft, fsh 2710 ft. Phillips Pet. Co. & C. B. Shaffer's T. G. Goode 1, lcn.

BREWSTER COUNTY — Ed. Bateman & Co.'s Neville 1-A, dr 3010 ft. E. L. Chapman et al's Skinner 2, sd 1030 ft. Trans-Pecos O&G Co.'s A. A. Jones 1, sd 1720 ft.

COCHRAN COUNTY—R. A. Westbrook & Co.'s Slaughter 1, top lime 3837 or 4265 ft, sulphur water 4822 ft, dr 4837 ft.

COKE COUNTY—Mid-Kansas O&G Co.'s Lackey 1, elev 2152 ft, sd 4255 ft.

CROCKETT COUNTY — Empire Gas & Fuel Co.'s Shannon 1, sd 2660 ft. Magnolia Pet. Co.'s Hoover 1, top salt 660 ft, ur 680 ft.

CULBERSON COUNTY—Grisham-Hunter Corp.'s Seay 3, elev 3634 ft, dr 2715 ft.

ECTOR COUNTY—Cosden Oil Co.'s University 2-A, lcn; University 2-B, rig; Kloh 1, dk. C. P. Davis et al's Hendrick 1, sp and sd. Gulf Prod. Co.'s University 1, rig; University 1-A, rig. Humble Penn-Atlantic's Kloh 2-D, rig; Kloh 3-D and 4-D, dks; R. L. York 2, dr 530 ft; York 3, dr 200 ft; York 4, 5 and 6, rigs. Landreth Prod. Corp.'s University 1-R, rig; University 2-S, rig; University 2-T, dr 860 ft. Llano Oil Co.'s T. S. Hogan 1, elev 2914 ft, top salt 1390 ft, dr 2960 ft. Penn Oil Co. & Devonian Oil Co.'s Goodman 1, lcn. Skelly Oil Co. & Amerada's University 1, dk.

EL PASO COUNTY—Inter-Coastal Oil Co.'s Malone 1, sd 1340 ft.

FISHER COUNTY—Cranfill-Reynolds Co.'s Johnson 1, dr 1110 ft. Magnolia Pet. Co.'s Lee 1, elev 1827 ft, dr black shale 5190 ft.

GAINES COUNTY—Cranfill-Reynolds Co. & La. Oil Ref. Corp.'s Ralph 1, elev 3475 ft, top salt 1657 ft, top lime 4117 ft, dr 4495 ft.

GARZA COUNTY—H. C. Cate & Pandem Oil Corp.'s Stoker 1, sd 3018 ft.

GLASSCOCK COUNTY—Amerada's Coffee 2, dr 1780 ft. California Co.'s Currie 3, elev 2664 ft, pb from 3671 to 3523 ft; Jones 1, dk. Continental Oil Co.'s Hart Phillips 1, sp; E. B. Miller 1, lcn. FHE Oil Co.'s Box 1, rig. Luna Oil Co.'s Edwards 1, elev 2548 ft, top lime 2155 ft, pb from 2491 to 2471 ft. Simms Oil Co.'s Coffee 2, co with 500 ft oil in hole 2175-2300 ft; Coffee 3, dr 1920 ft; Coffee 4, rig. Ed. Timberlake & Snyder's Meek 1, elev 2792 ft, sd 1580 ft.

HOCKLEY COUNTY — World Oil Co.'s Ellwood 1, elev 3363 ft, top salt 2127 ft, top lime 4570 ft, dr 5030 ft.

HOWARD COUNTY—Owen-Sloan Co. et al's Flowers 1, elev 2497 ft, co 2517 ft. Meriwether Oil Co.'s Eva Smith 1, sd 2275 ft.

HUDSPETH COUNTY — California Co.'s University 1, elev 5190 ft, dr gray lime 3595 ft.

IRION COUNTY — Atlantic & Beasley's Sawyer 1, elev 2419 ft, sd 1805 ft. J. B. Crawford et al's Nutt 1, sd 1105 ft. Glenn et al's Tankersley 1, lcn. Irion Oil Co.'s Tankersley 1-A, sd 200 ft. Kingwood Oil Co.'s Sugg 1, elev 2334 ft, sd after four shots, td 7818 ft. J. A. Starkweather et al's Lindley 1, dr 1950 ft.

ABBREVIATIONS

NOTE—The following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶K million feet of gas; abn—abandoned; bbls—barrels; b.s.—basic sediment; cas—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in.—inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp—spudding; sr—straight reaming; std—standardizing; sw—salt water; td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

P. H. Williams et al's Ashe 1, elev 2726 ft, top lime 1712 ft, sd 7174 ft.

JONES COUNTY—Conoco's Phillips 1, dr water sand 3025 ft. Mid-Tex O&G Co.'s King 1, sd 1560 ft. W. S. Ware et al's Neuman 2, sd 2470 ft.

KENT COUNTY—Atlantic Oil Prod. Co. Unit Plan's Wallace 1, elev 2253 ft, top salt 330 ft, dr lime 2730 ft.

LOVING COUNTY—California Co.'s J. G. Allen 1, rig; Reagan-McElvain 1, rig. Hadlock et al's Ramsey-Russell 2-A, rig. Humble O&R Co. Unit Plan's Kloh 1-D, elev 2814 ft, top salt 1230 ft, dr 3775 ft. Lockhart & Co.'s Bowen-Wells 3, dk; Hubbard 5, sd 2380 ft; Lepp 2, sp and sd; Wheat 1-H, elev 2713 ft, top Delaware 4152 ft, top black lime 5025 ft, bad hole 5040 ft.

LYNN COUNTY—Hart Oil Corp. et al's Edwards 1, elev 3128 ft, top salt 2140 ft, sd 5035 ft.

MENARD COUNTY—Conklin & Duffy's J. P. Sorrell 1, sp. Carl Cromwell & Duffy's Winslow 2, sd 1025 ft.

MITCHELL COUNTY—Gibson & Johnson's Scott 3, dr 1075 ft. Magnolia's Snyder 1, dr 2830 ft. Teas & Wheeler's Radford 1, elev 2223 ft, co 4820 ft.

NOLAN COUNTY—Gibson & Johnson's S. P. Boyd 1, elev 2126 ft, dr 3280 ft.

PECOS COUNTY—Atlantic Oil Prod. Co.'s Shearer 1, dr 420 ft. M. H. Black et al's Pecos Valley 1, elev 2434 ft, top salt 1016 ft, sd 1250 ft. E. L. Chapman et al's Streety 1, elev 2653 ft, dr 1825 ft. Cosden Oil Co.'s McDonald 1, sd 2015 ft. Cranfill-Reynolds Co.'s Masterson 1-B, dr red shale 1055 ft. Dixie Oil Co.'s McKenzie 1, ur 1122 ft. Fisher & Lowrie's R. D. Webb 1, lcn. Geyer-Frates, Inc.'s Sellman 1, elev 2716 ft, top salt 830 ft, top lime 1710 ft, dr hfw 1980 ft. Humble O&R Co.'s Cunningham 2, dr 985 ft. Hussman Oil Co.'s Estes 1, dr 1050 ft. Kennedy et al's Kennedy 1, elev 3217 ft, top salt 2705 ft, dr salt 2885 ft. Mauch & Krogen's Holmes 1, sd 1735 ft. R. E. Moore et al's Arnold 1, elev 3860 ft, sd 1615 ft. J. D. O'Mara et al's Bennett 1, elev 2513 ft, sd 875 ft. Pecos Valley Crude Oil Pur. Co.'s Pecos Valley 4, top salt 985 ft, sd for shot with 250 ft oil in hole 1622-49 ft. Sides & Cloyd's Blackstone-Slaughter 1, set cas 530 ft. Southern Crude Oil Pur. Co.'s McKenzie 1, dr 1330 ft. Stine & Griffith's McKenzie 1, elev 3156 ft, top salt 1330 ft, dr 1915 ft. The Texas Co. et al's Thomas H. Wright 1, rig. Transcontinental Oil Co.'s University 1, elev 2552 ft, top lime 1035 ft, fsh 4875 ft; White-Baker 2, dr 220 ft. Trees Oil Co.'s Trees 3, dr hfw 1385 ft. World Oil Co.'s University 1-C, elev 2614 ft, set 8¼-in cas 1582 ft.

REAGAN COUNTY — Big Lake Oil Co.'s University 1-C, dr cavey shale 8382 ft; University 2-C, flow 621 bbls oil and 13,222,000 ft gas, td 8232 ft; University 3-C, dr shale and calsite 8525 ft; University 4-C, flowing 180 bbls oil and 4,328,000 ft gas 8220 ft. Group One Oil Corp. (Conoco's) University 2-B, dr shale 5490 ft; University 3-B, cemented 13⅜-in cas at 3037 ft, td 3348 ft.

REEVES COUNTY — Hansford et al's Williams 1, sd 380 ft. Slack & Fink's Brooks-Huling 1, dr 970 ft.

RUNNELS COUNTY—Geo. W. Boyce et al's Lange 1, ur 1740 ft. Gibson & Johnson's Johnson 1, dr 490 ft.

SCHLEICHER COUNTY—Delmar Oil Co.'s O'Harrow 1, dr 2280 ft. Eastland Oil Co.'s Tisdale 1, lcn. Phillips Pet. Co.'s J. A. Whitten 1, elev 2333 ft, cem cavey hole 5910 ft. Munger-Wilson Oil Co.'s Page 1, elev 2270 ft, trace oil 2120-25 ft, dr 2170 ft.

SCURRY COUNTY—J. G. Armand & Camp Springs O&R Co.'s Quinn 1-A, elev 2316 ft, fsh 3805 ft. E. L. Smith Oil Co. & Magnolia Pet. Co.'s Mooar 1, elev 2519 ft, top salt 750 ft, dr broken lime 3735 ft. Transcontinental & Vacuum Oil Co.'s Peckham 1, set cas 280 ft.

TAYLOR COUNTY—Condor Pet. Co.'s K. Stocker 1, sp and sd. A. H. Gibson et al's M. E. Cody 1, lcn. Gibson & Johnson's E. A. Bingham 1, lcn. J. B. Jameson et al's Webb 1, elev 1905 ft, dr 5340 ft.

TERRELL COUNTY—Big Bend Oil Corp.'s Bassett 1, elev 2396 ft, sd 1285 ft. Transcontinental's Goode 1, elev 2405 ft, dr 1840 ft. Keck Pecos Oil Trust's Hamilton 1, dr 3135 ft.

TERRY COUNTY — Penn Oil Co. Unit Plan's Carlisle-Arnett 1, materials.

UPTON COUNTY—TP Coal & Oil Co.'s E. V. Belcher 1, dr 590 ft.

VAL VERDE COUNTY—Phantom Oil Co.'s Ingram 1, ur 2545 ft. O. O. Owens et al's Mills 1, sd 5727 ft.

WARD COUNTY—Alpine Oil & Dev. Co.'s Dakan 1, running tubing to complete, td 2210 ft. E. J. Anderson et al's Townsite 1, elev 2443 ft, running tubing, td 2183 ft. C. C. Dorr & Atlantic's Costley 1-A, elev 2493 ft, co 1705 ft. Gulf Prod. Co.'s Hutchings 3, elev 2659 ft, top salt 1035 ft, testing 1300 ft oil in hole 2685-2721 ft; O'Brien 7, elev 2653 ft, top lime 2460 ft, pb from 3566 to 2954 ft. Harrison Oil Co. & FHE Oil Co.'s Wristen 1, elev 2530 ft, top salt 715 ft, trace oil and gas 3100 ft, dr lime 3165 ft. Penn Oil Co. & Atlantic's Bennett 2, elev 2579 ft, top salt 2085 ft, top lime 2260 ft, testing 1000 ft oil in hole at 2375-2453 ft; Cooper 1, elev 2609 ft, top salt 2430 ft, plugging acct flowing sulphur water, td 2880 ft. Shell Pet. Corp.'s Sloan-Owen 1, top salt 765 ft, making oil, dr lime 3765 ft. J. E. Smith et al's G. T. Clements 1, machine. Shipley Oil Corp.'s Monroe 1-A, co 385 ft. Sturm & Paine's Cummings 1, elev 2443 ft, top salt 780 ft, dr 1710 ft. Southern Crude Oil Pur. Co.'s Hill & Hill 1, dr 750 ft. Sun Oil Co.'s Sealy 1, elev 2680 ft, dr red shale 2015 ft. Tex-Oil Prod. Co.'s Redman 1-A, elev 2717 ft, top salt 1290 ft, dr 3970 ft.

WINKLER COUNTY—Sun Oil Co.'s Sealy 2, elev 2713 ft, dr red shale 2040 ft.

EAST CENTRAL TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
UPSHUR COUNTY—		
E. L. Chapman et al's J. H. Hudspeth 1	*	4114

ANDERSON COUNTY — Humble's W. Johnson 1, Jas. Hall sur, rotary rig. Magnolia Pet. Co.'s Ed. F. Williams 2, Wm. Bledsoe sur, dr 2580 ft. W. H. Roeser, Inc., & Roeser-Pendleton's W. L. Moody 1, elev 349 ft, Jas. Welch sur, top Pecan Gap chalk 2953 ft, dr 4090 ft. Sun Oil Co.'s Bowers-Maier 1, E. G. Meyers sur, rotary rig.

DELTA COUNTY — Gaither Pet. Co.'s Smith 1, J. B. Anderson sur, sd 1310 ft.

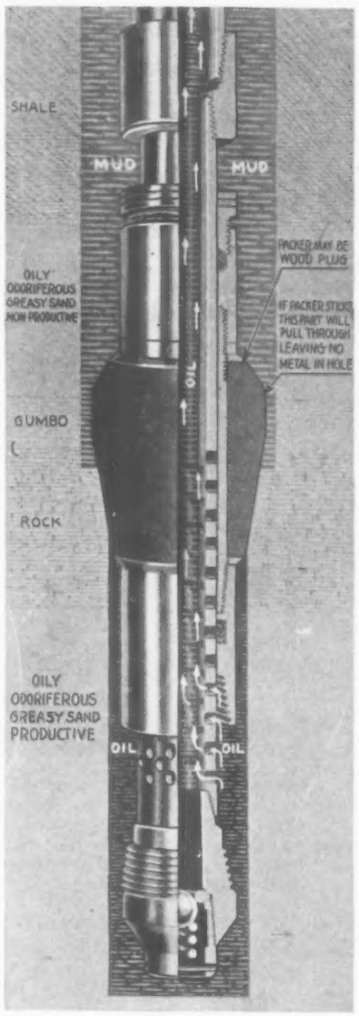
ELLIS COUNTY—G. C. Foster & S. C. Richardson's Moise-Cerf 1, spd and sd.

FREESTONE COUNTY — Haley-Young et al's Knight 1, David Bullock sur, sd 4718 ft. O. W. Killam-Phillips et al's R. H. Edwards 1, A. Sanchez sur, rotary rig. C. F. Lytle et al's Holt 1, D. Avant sur, dr 4100 ft. Penn Oil Co.-Dixie Oil Co. & J. R. Black's B. M. Burgher 1, C. Chamar sur, rotary rig.

HENDERSON COUNTY—E. L. Chapman et al's Cade 1, Simon Weiss sur, co 1800 ft. Cranfill-Reynolds Co. & La. Oil Ref. Corp.'s J. W. Broom 1, Samuel Chears sur, materials.

LAMAR COUNTY—Bert Lauberheim et al's

Representatives Wanted!



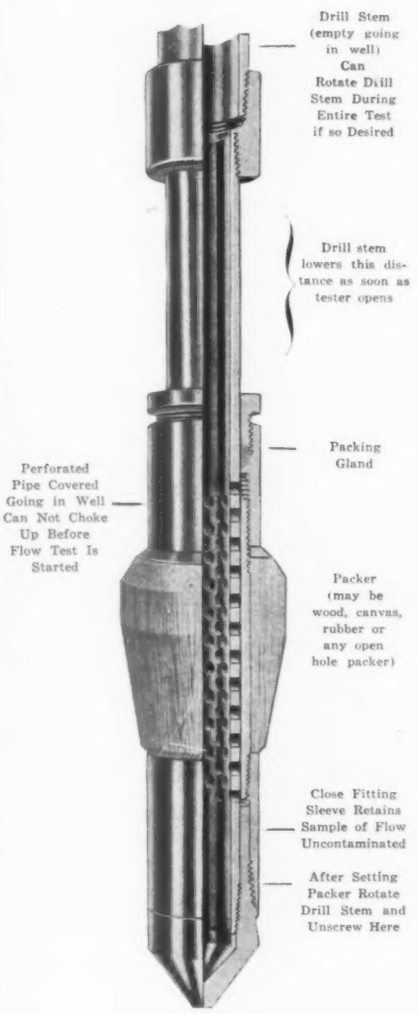
We are desirous of licensing reputable persons to represent us in the establishment of the

OIL WELL TESTING

business in the following foreign countries and under the following foreign patents:

Country	*Patent No.*
VENEZUELA	840
ROUMANIA	13150
INDIA	12498
MEXICO	26274
COLOMBIA	2213
GREAT BRITAIN	279175
FRANCE	596104
ARGENTINE	27810

Patents Pending in other countries.


Drill Stem (empty going in well) Can Rotate Drill Stem During Entire Test if so Desired
Drill stem lowers this distance as soon as tester opens
Packing Gland
Perforated Pipe Covered Going in Well Can Not Choke Up Before Flow Test Is Started
Packer (may be wood, canvas, rubber or any open hole packer)
Close Fitting Sleeve Retains Sample of Flow Uncontaminated
After Setting Packer Rotate Drill Stem and Unscrew Here

We shall announce in the very near future a new policy in the United States, as we expect to manufacture a number of different sizes and types of TESTING DEVICES which will meet the demand of the trade as to price and patent protection.

Patent Application pending in the United States since February, 1926

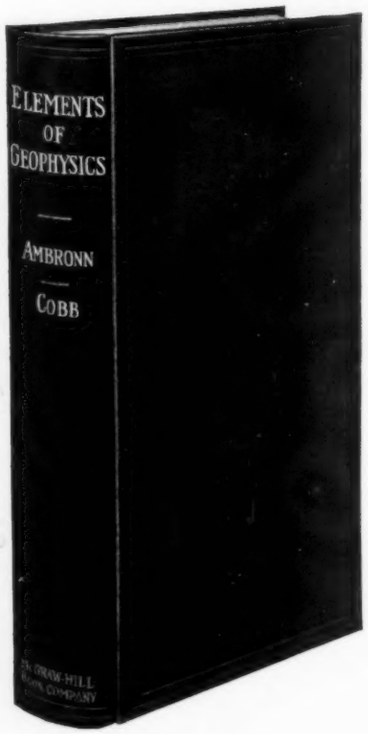
"WE WERE THE FIRST TO USE THIS METHOD IN THE TESTING OF OIL AND GAS WELLS."

ERLE P. HALLIBURTON CO.

Duncan, Okla.

Geophysical Exploration

for the discovery of minerals, oil and gas



An authoritative discussion of geophysical methods of exploration in mining and hydraulics, in the solution of water supply problems and as an auxiliary to geologic research. The book summarizes the scientific background of geophysics and describes exact methods of geophysical procedure.

Elements of Geophysics

By RICHARD AMBRONN

Gottinger

Translated by M. C. Cobb, M.A., Ph.D.

This is the first treatment in English of a subject of real and rapidly growing importance to the practical geologist, the petroleum geologist and the mining engineer.

The book presents a broad survey of this new field of investigation, reviewing, developments of the various divisions of geophysical application summarizing the results which have been accomplished. At the same time it outlines all established geophysical methods in clear, terse, practical fashion.

CONTENTS

I. The Development and Present Position and Geophysical Methods Applied to Prospecting.

II. The Influence of the Subsurface Formations on the Gravitational Field at the Surface of the Earth.

III. Magnetic Methods of Investigation.

IV. The Use of Radioactive and Atmospheric-electric Measurements for Geophysical Prospecting.

V. Energy Currents.

VI. Electrical Methods of Prospecting.

VII. The Investigation of the Structure of the Subsoil by Means of Elastic (Seismic) Waves.

VIII. The Distribution of Temperature in the Earth's Interior and the Use of Temperature Measurements in Applied Geophysics.

372 pages, 6x9, 84 illustrations, $5.00

GULF PUBLISHING CO., 3301 Buffalo Drive, Houston, Texas

S. D. Johnson 1, Wm. Driggers sur, elev 667 ft, top chalk 1310 ft, fsh drill stem 3090 ft.

LEE COUNTY—D. H. Byrd et al's R. L. Bostic 1, sd 3752 ft.

LIMESTONE COUNTY — Frank Haley & Arthur Heemann's D. Wilkes 1, John Breeding sur, sd 690 ft.

RUSK COUNTY—Magnolia's Duran-Wylie 1, Aquilla Norris sur, dr 1375 ft.

SMITH COUNTY—R. H. Davis et al's J. H. Starnes 1, J. W. Allen sur, dr 995 ft. Deep Rock Oil Co. et al's Bowdoin-Fleming 1, M. V. Lout sur, dr 1950 ft. East Texas Pet. Corp.'s Kadane 1, John McFadden sur, elev 465 ft, dr 2105 ft. O. M. Rector et al's M. Dozier 1, Mathew Maise sur, lcn. Sutton et al's J. M. Hammon 1, Jas Reed sur, dk.

TITUS COUNTY—Wainwright-West Oils, Ltd.'s, Walcott & Lott 1, D. M. Smith sur, rotary rig.

VAN ZANDT COUNTY—Central Oil Co. & H. L. Hunt's S. J. West 1, A. C. Walters sur, elev 564 ft, dr 3115 ft. Warren Daniels et al's Fannie Cumby 1, John Wright sur, lcn. Dennis Oil Co. (H. Harper et al's) C. W. Morris 1, C. L. Morrison sur, dr 620 ft. W. H. Kerbow et al's J. A. Everitt 1, A. Carlisle sur, elev 410 ft, top pecan gap chalk 2918 ft, dr hard chalk 2945 ft. Manley-Sprinkle & Evans' B. C. Andrews 1, Margaret Neal sur, rotary rig. R. C. McElmurray et al's J. W. Peel 1, S. T. Meeks sur, dr 1400 ft. Arthur H. Ray & Ward Powell's A. J. Berry 1, Nacogdoches County sur, dr 510 ft. T. G. Shaw-Fagg et al's W. F. Huddle 1, L. Richardson sur, elev 545 ft, top pecan gap chalk 2593 ft. dr 3110 ft. Texas Chief Oil & Royalty Co.'s J. P. Foster 1, Montgomery sur, lcn. Van Zandt County Oil & Dev. Co.'s Sharp-Robinson 1, J. B. Ybarbo sur, co 1415 ft.

VAN ZANDT COUNTY (Van Field)—Central Oil Co.'s R. H. Peters 1, Nacogdoches County School Lands, dk. Hart Oil Co.'s O. L. Swain 1, (2.3 acres) John Walling sur, lcn. Pure Oil Co.'s R. C. Crim 1, elev 483 ft, top pecan gap chalk 1745 ft, top Woodbine oil sand 2880 ft, dr pay 2891 ft; A. D. Clark 1, rotary rig; D. R. Howell 1, rotary rig; J. L. Thompson 2, rotary rig; A. R. Tunnell 1, rotary rig. Shell Pet. Corp.'s Tunnell 3, rotary rig. Sun Oil Co.'s Thompson 1, elev 505 ft, top Austin chalk 2138 ft, coring oil sand 2461-2693 ft. The Texas Co.'s R. A. Tunnell 1, rotary rig; R. V. White 1, rotary rig; W. White 1, coring gray sandstone 2608 ft.

WOOD COUNTY—Gulf Prod. Co.'s N. E. Carver 1, Wm. Kern sur, dr 1020 ft. Westexas Oil & Royalty Corp.'s Negro Orphanage 1, Chas. E. Rivers sur, rotary rig.

SOUTHWEST TEXAS

BASTROP COUNTY — Gulf's Spillman 1, lcn. Harper et al's Mitchell 1, dk. Humble's Singer 1, lcn; White 1-A, lcn. Superior Oil Co.'s King 1-A, dr; Lasher 1, dk.

BEXAR COUNTY — Burton Oil Corp.'s Shook 1, dr 600 ft. Eckert's Sandemeyer 1, dr. Leon Creek Oil Co.'s Reininger 1, dr. Dingham-Schimmil's Kelso 1, showing in Edwards at 1480 ft. Moore & Juar's Ellison 1, dr. Wallace et al's Dulling 1, dr.

BEE COUNTY—Houston Oil Co.'s Portis 1, moving on. Nichols et al's Hicks-Hahl 1, lcn; Hicks-Hahl 2, lcn. Morgan Oil Corp.'s Ray 1, sp in; Ray 2, moving on. Mauldine Bros.' Kilden 1, sp in. E. S. Price's Weiss 1, lcn. Union Prod. Co.'s Ray 6, dr, show at 4143 ft; Ray 5, dr about 900 ft.

BROOKS COUNTY — Houston Oil Co.'s Holbein Wormser, dr deeper hole now at 4150 ft. Humble's Singer 1, showing of gas and sulphur water at 1938 ft.

CALDWELL COUNTY—Calico Pet. Co. et al's Martin 1, being completed 2929 ft. Buchanan et al's Cude 1, ru. Cranfill-Reynolds' Stawn 1, prep to sp. Stone et al's Croyne 1, dr. Harper et al's Thomas 3, fsh; Crenshaw 1, reaming at 1950 ft. Humble's New 1, prod 200 bbls at 2763 ft. Morgan et al's Perry 1, ru. McIntyre's Townes 1, sd at 2630 ft. Sun Oil Co.'s Cude 1, sp in. Trinity Drillers' McMullen 1, lcn.

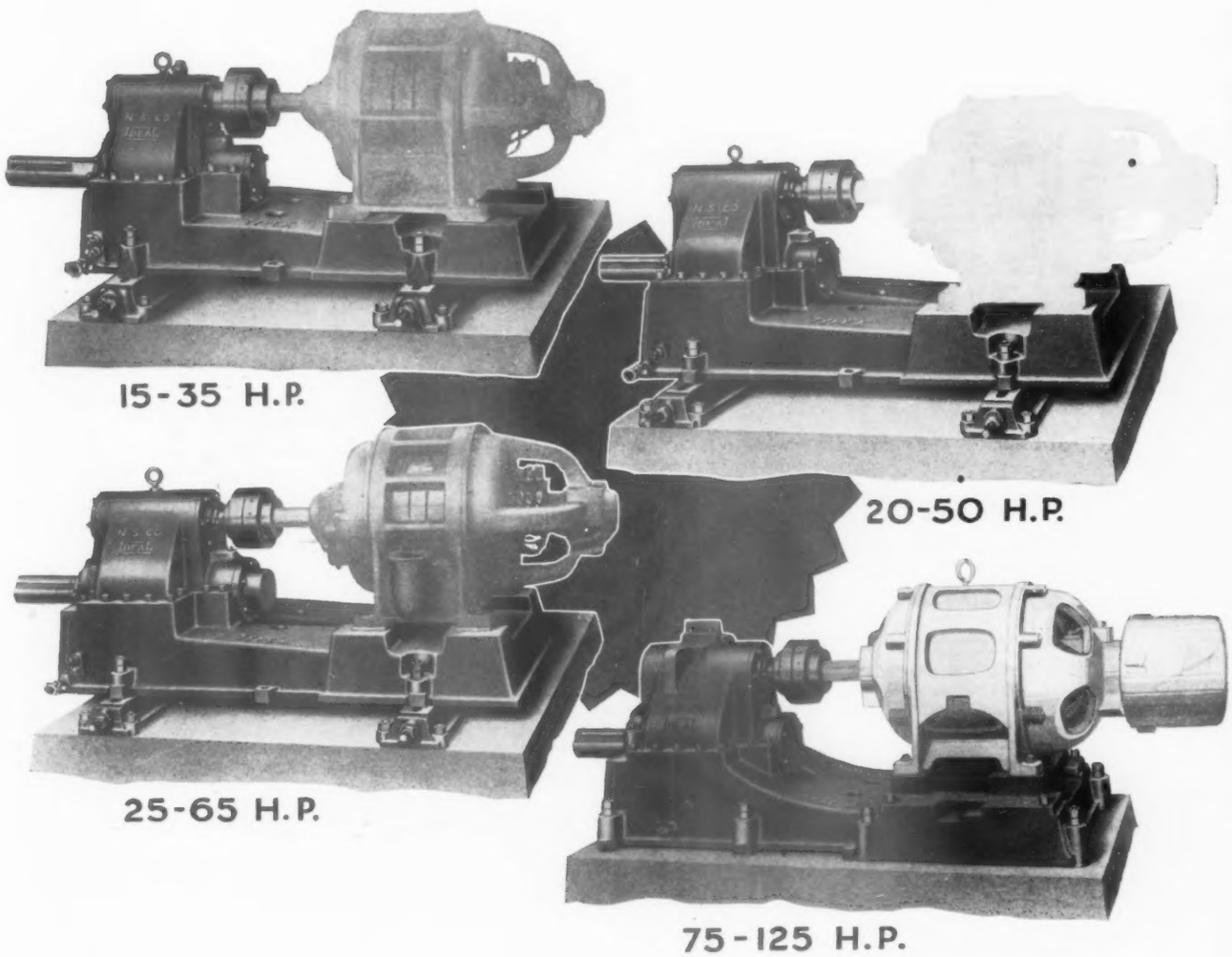
DE WITT COUNTY—Zoch et al's Steinman 1, dr 3860 ft.

DUVAL COUNTY—Allied Gas Co.'s Dinn 8,

IDEAL

TYPE A

ROLLER BEARING REDUCTION GEARS



THE NATIONAL SUPPLY COMPANIES

lcn; Peters 2, dr 1400 ft; J. T. Dinn 1, dr at 800 ft. Buckner et al's Peters 1, dr; Bruni 1, dr. Callahan & Howard's Luby 1, lcn. Cole Pet. Co.'s Benavides 68, blk 11, sec 14, lcn. Humble's Kohler 41, lcn; Kohler 42, set surface cas at 293 ft. O. W. Killam's Bruni 17, dr. Long's Hahl 3, lcn. Magnolia's Brennan 4 Benavides, dr; King-Harper 2, lcn; Benavides 6, dr 740 ft. National Oil Co.'s Ball 2, resume dr at 2300 ft; Peters 1, dr at 300 ft. Simms Oil Co.'s Dinn 8, prod 30 mil cu ft gas at 1753 ft. Southern Oil Co.'s Welder-Woods 1, sd 750 ft. Suladie Dr. Co.'s Peters 1, dr. Trapshooter Reilly and C. W. Long's Hahl 4, dr. Zoch et al's King 1, dr 2835 ft.

FAYETTE COUNTY—Smith Bro.'s 1, no report.

FRIO COUNTY—Lefevre et al's Eschenburg 1, ru.

GONZALES COUNTY — Adams & Lisles' Jackson 1, dr. Acme Oil & Royalty Co.'s Weber 1, dr 1880 ft. Beeman & Station's Station 1, dr. Burt & Son's Menking 1, dr. Fitzsimmons et al's Huber 1, dr 1320 ft. Keiffer's Dix 1, sd at 2900 ft. Mrs. Alice Richardson's Garrett 1 Cardwell, to resume dr. Green et al's Dix 1, sd. Grayburg Oil Co.'s Willow Springs 1, dr. Lindermann Bros.' Frampton 2, dr. United North & South Oil Co.'s Kerr 1, sd at 5591 ft.

GUADALUPE COUNTY—Adams & Lisles' Hoffman 1, dr 900 ft. Cranfill-Reynolds' R. C. Appling 1, pull tubing at 2813 ft. Clemens-Trinity Drillers' Miller 2-C, dr; White 1, lcn. Grayburg Oil Co.'s Wells 2, lcn. Gulf's McKean-Dix 2, prod 1200 bbls at 2620 ft; Baker-Posey 1, prod 1200 bbls at 2615 ft; Baker-Posey 2, prod 600 bbls at 2610 ft; Baker-Posey 3, prod 400 bbls at 2620 ft; McKean-Dix 3, dr at 2350 ft; McKean-Dix 4, prep to set cas at 2596 ft; Knoblock 1, dr below 2480 ft; T. Dix 2, dr at 2508 ft. Humble's Yates Wilson 1, dk; Yates-Wilson 3, lcn; Denman 1-B, dr; Dowdy 2, lcn; Baker 1, lcn; Baker 2, lcn; Sally Wilson 1, dr; Thomas Dix 5, being completed around 2600 ft; Denman 9-A, dr 2535 ft; Denman 8-A, prod 1100 bbls at 2582 ft; Denman 6-A, prod 840 bbls at 2598 ft; Mrs. Tadlock 1, prod 100 bbls at 2647 ft; Denman 10-A, lcn. Magnolia's Echols 1, sd at 2735 ft; Echols 2, prep to set cas about 2560 ft; Rand Miller 2, dr; Echols 3, dr; Roamel 1, dr 3156 ft; Roamel 2, dk; Roamel 3, cas set at 2590 ft; Walker 1, sp in; Dix 2, prod 780 bbls at 2620 ft; Goldman 1, being completed around 2720 ft; T. Dix 6, dr 2408 ft. Knodel 2, dr 2152 ft. Stroube & Stroube's Rand Miller 2, lcn; Rand Miller 3, lcn; Rand Miller 4, lcn. Sun Oil Co.'s Knoblock 3, dr; Knoblock 4, sp in. Texas Co.'s Roamel 1, dr; Roamel 3, dr 2508 ft; M. E. Roamel 1, dr 2702 ft; Lemmy Anderson 2, sd; Lemmy Anderson 3, dk; Dallas Wilson 2, dr; Dallas Wilson 3, dk; Dallas Wilson 5, dr 2521 ft; Henry Willie 3, being completed at 2610 ft; Knoblock 1-A, dr 1900 ft; Knoblock 2-A, dr 1932 ft; Knoblock 3-B, dr 2546 ft; Posey-Baker 2, dk. Thurman et al's Talley 1, sp in; Dowdy 2, sd at 1200 ft. United North & South's Roamel 3, dr; McKean-Dix 2-A, dr 2572 ft; McKean-Dix 1-B, dr 2565 ft.

JIM HOGG COUNTY — Alworth-Stevens-Hild's Garza 1, dr. L. M. Holden's Jones 4, dr. O. W. Killam's Martinez 2, dr. Magnolia's Martinez 4, dr; Martinez 5, dr; Weil 1, dr 3260 ft. Marshall-George's Holbein 4, dr; Holbein 5, dr. Moore-Milam Dr. Co.'s Guerra 1, dr. Texas Co.'s Bandera 1, dr.

KARNES COUNTY—Burnett 1, dr. Hurador Pet. Co.'s Porter 1, ru new rotary, hole at 3400 ft. Texas Co.'s Butler 1, dr.

KERR COUNTY—Machs et al's Love 1, sp in.

KENDALL COUNTY—Borget et al's Willie Haag 1, dr about 700 ft. Dixon et al's 1, dr. Sterling et al's Wormser 1, dr.

LA SALLE COUNTY—Southwestern Pet. Corp.'s Beckwith 1, dr. Sun Oil Co.'s Berry 1, dr. Lake City Oil Co.'s Beckwith 1, dr 2740 ft.

LIVE OAK COUNTY—Catlett & O'Neill's Smith 1, dr 3620 ft. Houston Oil Co.'s Dunning 2, dr. Rowan Oil Co.'s Croquet 1, dr; Lynn 1, lcn. Simmons Oil Co.'s Croquet 1, dr 2940 ft.

MAVERICK COUNTY—Rycade Oil Co.'s Chittim 3, dr 6585 ft; Chittim 6, sp in; Sullivan 5, lcn.

MEDINA COUNTY—Donaldson Oil Co.'s Adams 2, sp in. Calico Oil Co.'s Crawford 1, dr. Pan-American Oil Co.'s Harrison 1, dr. Pearson Oil Co.'s S. A. Irrigation Farms 1, prod 40 mil to 50 mil cu ft gas at 780 ft. Switzer et al's Zerr 1, fsh at 3710 ft. Pure Oil Co.'s Fohn 1, dr. Heap Oil Co.'s Vance Oil Co.'s Fohn 1, dr.

McMULLEN COUNTY—Hilton, Phillips et al's Durden 1, lcn.

NUECES COUNTY — Graham, Wallace, Yeagley & Patton's Wallace 1, sd at 2640 ft. Saxet Oil Co.'s Dinn 5, being completed, cas set at 3680 ft.

REFUGIO COUNTY — Hamil Dr. Co.'s Cable lcn. Heap Oil Co.'s Vance 1, ru. Edwin Jones' Leissering 1, dr 1840 ft; Heard 1-A, ru; Mitchell 1-A, lcn; Jetter 1, prep to sp. Houston Gulf Gas Co.'s Lambert 1, set cas at 5887 ft to test excellent showing of oil; Lambert 2, sp in; Rose Lambert 1-A, dr 3212 ft; Morgan-Vance 2, large gasser at 3692 ft, attempting to convert into oil well; Morgan-Shelly 2, dr; O'Brien 6, dr 2750 ft; T. P. Shelly 9, prep to set cas about 3590 ft; Cummings 3, set cas at 3650 ft. Houston Oil Co.'s Rooke Hotel 1, 1740 ft; Rooke 1, blk 48, to sp in; Carlysle 1, dr at 1482 ft; Baumgarten 1, dk; Ward 1, lcn; Tom Heard 1, dr at 720 ft; Rea 2, prod 300 bbls oil, part water, at 3680 ft; Shelton 1, sp in; Dorsey 1, ru. Independent Oil & Gas Co.'s J. B. F. Heard 1-B, swabbing at 3660 ft; J. B. F. Heard 2-B, no report; West 3, digging pits, to sp shortly; Shelly 1, being completed at 5490 ft; Mercy Academy 1, ru; Helen Reilly 1, dr 936 ft; Claude Heard 3, ru; Reilly 6, prep to cement cas at 3682 ft; C. Heard 1, moving on. Larco Oil Co.'s Strauch 1, setting cas at 3655 ft. Morgan Oil Corp.'s 1, blk 2, dr at 2700 ft; Swift 1, prod 400 bbls at 3680 ft; No. 1, blk 32, cement cas at 3670 ft; City 5, dr 1200 ft. Oigfuer Oil Corp.'s Ryals 3, dr. Pearson Properties' Ryalls 1, dr 1420 ft. Price et al's Mission 1, dr. Refugio Oil Corp.'s Wheeler Hrs. 1, blk 50, testing at 3676 ft. Sun Oil Co.'s Buckley 3, blk 2, sp in. Texas Co.'s Shelton 1, dr 4720 ft; Holmes Heard 3, dr. Saxet Oil Co.'s Cable 2, blk 19, dk; Cable 1, blk 20, prod 1000 bbls at 3686-95 ft; Fox 1, blk 95, lcn; Powers 1, blk 3, lcn; Serafina 1, blk 5, lcn; Holmes Heard 3, dr below 4420 ft. Rutherford Oil Co.'s No. 1, blk 77, prod 850 bbls at 3705 ft. Union Prod. Co.'s O'Brien 2, setting cas at 5554 ft to test sand; Shelton 1, swabbing at 5507-13 ft; No. 1, blk 100, dk; Moss 1, to sp in; Tom Heard 1, blk 3, dr; J. B. F. Heard 2, set cas at 3663 ft.

SAN PATRICIO COUNTY—La Ferria Oil & Gas Co.'s Smith 1, set cas at 2246 ft, prep to test showing of oil and gas.

STARR COUNTY — Adams, Scanlon & Wright's Porcion 71 1, abn at 30 ft. French et al's Reilly Allen 1, dr. Smith Adams' Welch 1, dr. The Texas Co.'s Guerra 1-B, setting up tools. Milam Drlg. Co.'s Allen 5, dr.

VICTORIA COUNTY—Humble's Welder 3-A, flowing about 25 bbls oil and 10 mil cu ft gas at 5600 ft, report.

VAL VERDE COUNTY — Blume et al's Yost 1, dr. Phantom Oil Co.'s Ingram 1, dr. Transcontinental Oil Co.'s Goode 1, dr.

UVALDE COUNTY — Phantom Oil Co.'s Claudt 1, to sp in. Weldon & Welch's Benson 1, testing at 770 ft; Edmonds 1, dr.

WEBB COUNTY — Buckner's Rose Benavides 1-A, dr 650 ft. Foster Barnsley's Webster 7, prod 75 bbls oil at 2622 ft. Houston Oil Co.'s Benavides 2-C, lcn; Benavides 2-D, dr. J. J. O'Brien's Benavides 3, dr; M. Benavides 1, dr; Perez 1, dr. O. W. Killam's No. 17, dr; Bruni 18, preparing to set up. Magnolia's S. Perez 1, dr 5120 ft; Brennan-Benavides 1, cleaning out to complete oil well at 3085 ft. W. E. May's Walls 1, dr at 1470 ft. George S. Marshall's Webster 2, sec 684, prep to sp in. W. R. Shankle's Webster 2, dr.

WILSON COUNTY — Rycade Oil Co.'s Hice 1, dr about 3400 ft. Empire Gas & Fuel Co.'s Phil Shook 1, dk.

WILLIAMSON COUNTY—Chapman et al's Fuch 1, sp in. Edwards and associates' Abbott 1, sp in. Lightfoot et al's Flecher 1, sp in. Simms Oil Co.'s Lawrence 1, sp in. Harlen et al's Stiles 1, prep to sp in. Powell and associates' Mager 1, sd around 1500 ft.

ZAPATA COUNTY—Allied Gas Co.'s 1, dr. Blair & Claggett's Treving 2, prod 360 bbls oil, cas set about 1240 ft; Trevino 3, lcn. Blankenship et al's Garza 2, dr at 100 ft; Montemayor 2, dr at 250 ft. Duval Oil Co.'s 1, dr. Dr. Edgington's Trevino 1, sec 412, ru. O. W. Killam's Martinez 2, plugged at 1953 ft; Cuellar 20, lcn; Cuellar 12, fsh at 1930 ft. Reese & Shankle's Associated lease 1, setting up. John Pappas' Cuellar 2, showing gas at 1863 ft, cas set at 1675 ft.

ZAVALLA COUNTY — Mid-Kansas Oil & Gas Co.'s Newton 1, prep to sp in. South Crude & Oil Co.'s Washer 1, dr at 1010 ft. Wiegand Bros.' Gates 1, dr about 1160 ft. Texas Gas Fuel Co.'s West 4, dr 1150 ft; Matthews 1, dr 920 ft. Tritex Oil Co.'s Burns 1, sd; Childress 2, dr about 750 ft.

EAST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
BOWIE COUNTY—		
Hooks O&G Co., Rosenberg 1, King sur	*	3086

BOWIE COUNTY—Hooks O&G Co.'s Rosenberg 1, King sur, dry abn, td 3086 ft.

CAMP COUNTY—Rogers et al's Enfelt 1, Montgomery sur, 1920 ft.

MORRIS COUNTY—Tucker & Fullwood's Henderson 1, J. C. Riddle sur, dk pat.

RED RIVER COUNTY—D. M. Buffington's Hoosier 1, Hughart sur, sd 2365 ft. Shad Harper's Garland 1, Wagley sur, sd 1862 ft. Johnson Pet. Co.'s Randolph 2, Dean sur, sd 2182 ft.

SHELBY COUNTY—Chapparral Oil Co.'s Holt 2, Matthew Moore sur, co td 3004 ft. Benedum & Trees' McCann 1, Nancy Beattie sur, sd 2090 ft.

TITUS COUNTY—Canadian Oil Co.'s Walcott 1, D. N. Smith sur, dk.

TEXAS GULF COAST

HARRIS COUNTY—		
J. M. West, Scorrega 1, Goose Creek	*	5080
Hammon et al, Brodt 1, s Sheeks	*	1200
JEFFERSON COUNTY—		
Rosedale Oil Co., Walker 1, Rosedale	*	1650
WASHINGTON COUNTY—		
L. O. Gleason, Kansas 1, e Wesley	*	300

AUSTIN COUNTY—Jas. T. O'Hara et al's Batla 1, Wm. Smithers sur, dr 3150 ft shale. Black Oil Co.'s Lancashire 1, 3 mi s Sealy, dr 2000 ft. McInnery et al's Hattie McDay 1, w Kinney, sd 500 ft.

BRAZORIA COUNTY—Thos. Faust et al's Fee 6, 2 mi s Nash dome, dr 3600 ft shale. Shell's Blakely-Winston 1, 2 mi ne Danbury, dr 4100 ft shale. Mills Bennett Prod. Co.'s Allen 1, Allen dome, completed for 750 bbls 35 gravity pipe line oil daily at 5000 ft. Rucks & Patterson's Hunter 1, near Hoskins Mound, dr 750 ft. Ward Drilling Co.'s Proctor 1, w of Hoskins Mound, dr 1300 ft.

CHAMBERS COUNTY — Pure's Mayes 9, Lost Lake, set cas at 2657 ft; Mayes 10, lcn; Lost Lake 4, dr 900 ft. Shell's Herff 1, s end Moss Bluff, dk.

FORT BEND COUNTY — Gulf's Brazos Valley Irrig. Co. 1, 3 mi sw Clodine, dr 3500 ft shale; Moore 20, Moores Field, dr 3150 ft shale. Pure's Jackson Brown 1, 5 mi e Long Point, moving in dk.

HARRIS COUNTY—Humble's Simms-Smith 77, Goose Creek, dr 4215 ft shale and shell; Warren 7, Hockley, dr 3566 ft hard shale; Woodburn 2, Genoa, dr 4838 ft shale; Minnetex 2, Mykawa, stdg 1177 ft; Siadous 1, Mykawa, set 7-inch cas at 4906 ft. Watts Drlg. Co.'s Hubert 1, Mykawa, will deepen from 4725 ft. Higgins O. & F. Co.'s Siadous 1, Mykawa, set 8¼-inch cas at 5060 ft. Hammon et al's Brodt 1, s Sheeks, abn at 1200 ft. J. M. West's Scorrega 1, Goose Creek, abn at 5075 ft. Cranfill-Reynolds Co.'s Brown 1, 5 mi nw Goose Creek, dr 5810 ft gbo. Mrs. J. C. Baldwin's Kitzman 1, 2 mi n Cypress, sd 4055 ft. Martin-Drake & James' Haney 1, 3 mi e Elena, dr 1315 ft. Buffalo Oil Co.'s Beall 1, 2 mi nw Eureka, dr 3650 ft.

JEFFERSON COUNTY — Westbury Oil Co.'s West 1, S. Choate sur, dr 2100 ft gbo. Gulf's Bordages 8, Fannett, dr 5550 ft sandy shale; G. W. Junker 1-A, dr 5300 ft; E. Thomas 1-A, dr 2250 ft; Thomas 13, dr 1500 ft gbo. The Texas Co.-Houston Oil Co.'s Fitzhugh 1, Big Hill, dr 5782 ft heaving shale. The Texas Co.'s Pipkin 2, Big Hill, sd 6008 ft. Rosedale Oil Co.'s Walker 1, Rosedale, abn 1650 ft. Stillwell Oil Co.'s Brinkman 1, near Port Arthur, dr 3250 ft.

LIBERTY COUNTY — Harrison Oil Co.'s Jamison 1, N. Dayton, dr 4100 ft. The Texas Co.-Paraffine Oil Co.'s Fee 1, N. Dayton, ru.

SKILLED SUPERVISION GUARANTEES THE QUALITY OF GULF PRODUCTS

COASTAL AND PARAFFINE CRUDES
GASOLINE — LUBRICATING OILS
NAPHTHA — GAS — OILS
WAX — PETROLEUM COKE
CYLINDER—ENGINE—CORDAGE

GULF REFINING COMPANY

General Sales Offices

PITTSBURGH, PA.

District Sales Office

New York Boston Philadelphia Louisville Atlanta Houston New Orleans

Ocean Terminals

Boston (Beverly), Mass.
Providence, R. I.
New York Harbor (Bayonne, N. J.)
Jacksonville, Fla.
Port Tampa, Fla.
Mobile (Magazine Point, Ala.)
Philadelphia (Girard Point, Pa.)
Charleston, S. C.
Savannah, Ga.
New Orleans (Gretna, La.)
Port Arthur, Texas
Galveston, Texas

Harvey S. Smith's Simmons & Brown 1, N. Dayton, ru. Gulf's Weiser 1, Hankamer, dr 5800 ft shale; Boyt 3, dr 4465 ft. Cranfill-Reynolds Co.'s Esperson 4-A, Esperson dome, completed for 500 bbls at 3342 ft; Esperson 6, came in flowing 100 bbls daily at 2325 ft; Esperson 7, dk; Davis 2, dr 1500 ft. Yount-Lee Oil Co.'s Moores Bluff Corp. 2, Esperson dome, dr 6375 ft sandy shale.

MATAGORDA COUNTY—Cockburn et al's Hawkins 1, Shepherds Mott, dr 3443 ft sandy shale.

ORANGE COUNTY — Veteran Oil Co.'s Read 1, 2 mi se Orange, dr 4550 ft. The Texas Co.'s Polk 2, Port Neches, set cas at 3100 ft over oil showing. Gulf's H. J. Stark 1, Port Neches, dr 6215 ft.

WALLER COUNTY—Kirby Pet. Co.'s Jim Davis 1, San Felipe, dr 850 ft. W. P. Morris et al's Chapman 1, 6 mi n Hempstead, dr 1850 ft shale.

WASHINGTON COUNTY — Anderson et al's Hughes 1, 3 mi n Chapel Hill, sd 2150 ft; Mueller 1, ne Burton, dk. Gleason et al's Novak 1, near Brenham, dr 1100 ft shale.

WHARTON COUNTY—Houston Gulf Gas Co.'s Fields 1, Boling, dr 4300 ft shale.

SOUTH LOUISIANA

ACADIA PARISH—Chas. P. Seiss' Abshire 1, 1 mi w Crowley, dr 4362 ft rock.

ASCENSION PARISH—Gulf's United Lds. Co. 17, Sorrento, dr 3420 ft sandy shale.

ASSUMPTION PARISH—Gulf's Armalise Planting Co. 1, Napoleonville, dr 4275 ft shale.

CALCASIEU PARISH—J. O. Davis' Ind. Lbr. Co. 1, Starks dome, stdg 3775 ft.

CAMERON PARISH—The Texas Co.'s Calcasieu Lake 5-A, S. Calcasieu Lake dome, capped piling; State Hackberry 6, dr 100 ft. Pure's Yount-Lee 8, dr 5308 ft sticky shale; Yount-Lee 9, dr 3500 ft. Shell's A. Marceaux 1, Mallard Bay, abn at 7230 ft in lime. Vacuum Oil Co.'s Cameron Meadows 1, e of Johnson Bayou, moving in.

IBERIA PARISH—The Texas Co.'s Vermilion Bay 4-A, dr 5995 ft rock. Jefferson Lake Oil Co.'s Lake Peigneur 4, Jefferson Island, dr 500 ft; No. 5, driving piling.

IBERVILLE PARISH—Shell's Wilbert 4, White Castle, dr 1000 ft. Standard of La.'s Schwing 3, Bayou Blue, set screen to test oil show at 2160-85 ft; Wilbert 3, completed for 150 bbls at 1980 ft; Wilbert 5 and 6, capped piling; Cyrus Case 1, Bayou des Glaise, dr 100 ft.

JEFFERSON DAVIS PARISH—Pure's Day 1, 1½ mi sw Welsh, dr 2560 ft sandy shale. Gulf's City of New Orleans 1, Sec. 19-23s-23e, dr 4360 ft sand and shale; Mrs. Stark et al 25, dr 3750 ft salt.

PLAQUEMINES PARISH — The Texas Co.'s Garden Island Bay 3, Sec. 107-23s-32e, abn 2000 ft; No. 4, lcn. Humble's Cockrell-Moran 1, T. 20s, R. 26e, dr 1600 ft; Lake Washington 1, T. 20s, R. 26e, sd 4260 ft.

ST. LANDRY PARISH — Elbof Explorations' Valmont Ledoux 1, Eunice, sd 4362 ft. The Texas Co.'s Botany Bay Fee 4, Port Barre, came in flowing 1200 bbls at 3425 ft. Gulf's Lahaye 1, Port Barre, flowing 1200 bbls at 3382 ft; Godet 3, dk. Hebert-Baker Oil Co.'s Fisher 1, Sec. 10-3s-4e, dr 3720 ft sand.

ST. MARTIN PARISH—The Texas Co.'s St. Martin Ld. Co. Fee 1, Hager dome, dr 6230 ft hard sand; No. 2, dr 4900 ft; Iberville Ld. Co. 1, dr 5375 ft. Yount-Lee Oil Co.'s Hebert Heirs 1, Anse La Butte, dr 3975 ft rock. Rycade-Humble's Bayou Bouillon 9, dr 1350 ft; Atchafalaya Fee 5, dr 3325 ft water sand.

ST. MARY PARISH—La. Land & Explo. Co.'s L. L. Clarke 2, Glenwild, dr 1150 ft. Empire-Vacuum's Zenor 1, 2 mi n Patterson, dr 1400 ft. Pure's Wax Lake State 1, moving in materials.

TERREBONNE PARISH — Chas. Paggi's Evergreen 2, sd 500 ft. The Texas Co.'s Caillou Island State 3, lcn; Four Isle 3, foundation; Lake Pelto 2-B, dk; Lake Pelto 3-B, dr 4375 ft; Bay St. Elaine 4, moving in; Lake Barre 3, dr 1750 ft; Dog Lake Bayou 2-B, dr 5750 ft.

KANSAS

SUMNER COUNTY — Davidson et al's Strickland 1, sw se, 12-35-1w, rig.

STEVENS COUNTY—Argus Oil Co.'s Armstrong 1, cnl, s½ nw, 16-34-39w, rog. W. Sidwell et al's Kelly 1, sw ne, 16-34-38w, sd 1600 ft. Argus Oil Co.'s Parker 1, c sw, 19-34-36w, lcn.

BARBER COUNTY—Skelly, Temple Ranch 1, sw ne, 13-34-15w, top lime 4040 ft, sd 4702 ft.

SUMNER COUNTY—Morgan and Carey's Kawkins 1, sw se, 1-34-1e, dr 3751 ft.

COWLEY COUNTY — Edenfield & Fair's Wallace 1, cwl ne, 17-34-4e, ¶2 gas 365-75 ft, sd.

STEVENS COUNTY — McNabb et al's Ramey 1, c sw, 1-33-38w, rig. Argus Oil Co.'s Smith 1, c sw 13-33-37w, lcn.

CHAUTAUQUA COUNTY—Valentine Oil, Purcell 1, nw se sw, 2-33-9e, spd and abd.

SEWARD COUNTY—Mangle's Younger 1, c se nw, 24-32-39w, spd and sd. Argus Gas Co.'s Hobble 1, c se 17-32-37w, 8-in cas 2409 ft rust.

BARBER COUNTY—Robertson et al's Powell 1, c se se, 11-32-10w, sd 3955 ft.

COWLEY COUNTY—Fine et al's Brown 1, sec 8-32-4e, td 2977 ft, rug 6-in cas. Prairie's Desbaugh 1, sec 10t s7, 18-32-8e, rog.

HARPER COUNTY—Beeler et al's Bear 1, c nw 21-31-6w, sd 1830 ft.

SUMNER COUNTY — Kingwood's Stayton 1, c ne, 18-31-2w, chat 3845-70 ft, 1 bailer oil per hr dr 4005 ft. Taylor & Payne's McCutcheon 1, c ne sw se, 12-31-2e, sd 1830 ft water 1775-84 ft.

COWLEY COUNTY—Milton & Mead Bros.' Tatum 1, se sw, 11-31-6e, sd 1920 ft.

SUMNER COUNTY—Harfield et al's Dauber 1, nec, 18-30-1w, spd and sd. Lario et al's Osborne 1, ne se, 20-30-1w, hfw 3590-3605 ft sd 3680 ft.

ELK COUNTY—Empire & Arkansas Fuel's Record 1, c nw ne se, 32-20-10e, sd 2350 ft. H. F. Fleming's Sherod 1, nwc 16-29-9e spd.

KINGMAN COUNTY—D. P. Fleeger, Ashbraft 1, 16-28-7w, Wilcox 4343-50 ft hfw dr 4525 ft.

SEDGWICK COUNTY—Continental & Amerada's Sensroth 1, nw c 25-28-4w, hfw 4203-23 ft, 4305-09 ft, td, hfw, d&a. McCulloch's Buckles 1, nw se, 3-28-1w, sd 1115 ft.

FORD COUNTY—McNabb et al's Unknown 1, c se 26-27-22w, sd 400 ft.

KINGMAN COUNTY—White Eagle et al's Lorenz 1, c ne se se, 25-27-5w, Viola 4120-28 ft, hfw; Wilcox 4140 ft, 5-in cas 4182 ft, co

BUTLER COUNTY—Martin et al's Flanigan 1, c sw se sw, 29-27-3e, sd 1930 ft.

GREENWOOD COUNTY — F. Konday et al's Rock 1, ne nw ne, 7-27-12e, dr 985.

PRATT COUNTY—Skelly's Johnson 1, ne sw, 21-26-17w, dr 3865. Wilcox's Unknown 1, sw nw, 7-26-15w, td 2785 ft, ur in cas. O'Haver & Jones' Careke 1, c ne sw, 7-26-14w, hfw 3455 ft, dr 3860 ft.

RENO COUNTY—Wilson et al's McPheeters 1, c s½ nw, 22-26-8w, sd 3655 ft. Valerius' Stevens 1, c ne se ne, 6-26-7w, rog.

SEDGWICK COUNTY — Travender et al's McLean 1, se sw se, 23-26-1w, dr 150 ft.

BUTLER COUNTY—Shell's Harper 1, sw ne, 35-26-3e, hfw, 2020-45 ft, td 2567 ft, ur 8-in cas.

HODGEMAN COUNTY—Swain et al's Kenthrone 1, c nw, 21-25-24w, dr 840 ft.

EDWARDS COUNTY — Dixie-Amerada's McCarty 1, sw, 22-25-17w, dr 3828 ft. Barnsdall's McCarty 1, nw ne, 31-25-17w, dr 3640 ft.

GREENWOOD COUNTY — Ward McGinnin's Henley 1, sw ne, 23-25-93, sd 1800 ft.

RENO COUNTY—Skelly's Birkett 1, ne sw, 20-24-7w, Wilcox 4172-96 ft, hfw, sd.

HARVEY COUNTY—E. W. Marland's Neiman1, c ne se ne, 8-24-3e, chat 2893-98 ft, four bailers water per hr, hfw, 2975-90 ft, Wilcox 3291-98 ft, hfw, Siliceous lime 3373 ft, td 3375 ft, ur 6-in cas.

WOODSON COUNTY—O. K. O. Oil Co.'s Hoagland 1, sw ne ne, 2-24-14e, spd.

STAFFORD COUNTY — Gibson et al's Mueller 1, c sw, 11-23-14w, td 3400 ft, 8-in cas.

HARVEY COUNTY—Liggett's Regier 1, c se nw se, 2-23-2w, dr 3365. Margaret Gay Oil Co.'s Grouse 1, nw ne nw, 29-23-1w, sd 3360 ft.

HODGEMAN COUNTY — Phillips' Houseman 1, c nw ne, 30-22-22w, show oil & hfw, 4620-34 ft, dr 4895 ft.

RENO COUNTY—Will et al's Olsen 1, se sw, 14-22-6w, hfw, 2845-80 ft, dr 3025 ft.

HARVEY COUNTY—Superior's Regier 1, se nw, 11-23-3w, hfw, 3245-55 ft, dr 3325 ft.

RENO COUNTY—Burgher's Fair 1, c se ne ne, 14-21-10w, dr 2325 ft.

McPHERSON COUNTY—McCulloch's Cornelius 1, swc, 7-21-4w, hfw, 3500 ft, dr 3575 ft.

LYONS COUNTY—Sheedy et al's Ewers 1, c ne se nw, 4-21-10e, rig.

LYONS COUNTY—F. A. Bailere's McKee 1, sw ne, 32-21-11e, so 1850-60 ft, td 2068 ft, d&a.

RUSH COUNTY—Prairie's Black 1, sw ne, 11-20-18w, dr 3700 ft.

RICE COUNTY—Miller & Detrick's Shumway 1, c sw 2-29-9w, sd 3636 ft. McCullock's Williams 1, e ne, 35-20-8w, rig Derby's Johnson 1, c nw ne se, 24-20-6w, td 3125 ft, ur 8-in cas.

McPHERSON COUNTY—Millmack's Decker 1, nwc, 11-20-3w, skidded rig, sd 1472 ft.

CHASE COUNTY — Steinbushel et al's Stephenson 1, ne sw, 4-20-6e, sd 500 ft.

LYON COUNTY—Sheedy et al's Reese 1, sw se, 16-20-10e, sd 1200 ft.

RUSH COUNTY—Danciger's Bell 1, c sw, 16-19-8w, td 2900 ft, rebldg rig.

McPHERSON COUNTY—Transcontinental's Algers 1, ne sw, 1-19-5w, co 4012 ft.

MARION COUNTY—Empire's Black 1, c ne nw sw, 27-19-2e, dr 2552 ft. Marshall et al's Higgins 1, nec, 33-19-5e, rig.

CHASE COUNTY—Steinbushel et al's Cook 1, sec 195 27, 31-19-8e, sd 900 ft.

LANE COUNTY—Robinson et al's Dickerson 1, swc nw se, 11-18-27w, td 2625 ft, d&a.

RUSH COUNTY—Millmack's Mohr 1, c nw, 11-18-16w, dr 1235 ft.

RICE COUNTY—Tatlock et al's Ploog 1, c sw se, 33-19-9w, rog. Urschell et al's Lipps 1, c sw se, 27-18-6e, dr 250 ft.

CHASE COUNTY—E. W. Marland's Altenmus 1, se ne, 33-18-8e, skidded rig, dr 650 ft.

BARTON COUNTY—Slick et al's Sweeney 1, sw ne, 23-17-11w, sd 3430 ft.

ELLSWORTH COUNTY — Tatlock et al's Sacken 1, c sw se, 25-17-9w, dr 3015 ft.

McPHERSON COUNTY — Dixie's Johnson 1, swc, 20-17-3w, water 2675-85 ft, dr 2724 ft. Galt-Brown et al's Zeitlow 1, c ne se se, 7-17-1w, dr 1300 ft.

BARTON COUNTY—Prairie's Davidson 1, nw se, 4-16-11w, dr 1315 ft.

DICKINSON COUNTY—Prairie & Phillip's Rumold 1, e nw sw ne, 12-16-2e, dr 2360 ft. Hiatt & Dunham's Went 1, nwc, 17-16-2e, spd.

MORRIS COUNTY—Urschell et al's Scott 1, ne sw, 6-16-6e, sd 1600 ft.

TREGO COUNTY—Prairie's Kutina 1, c ne sw ne, 29-15-21w, dr 4183 ft.

ELLIS COUNTY — Rush Oil Co.'s Gatewood 1, nw, 4-15-20w, sd 2555 ft.

SALINE COUNTY—Austin's Olsen 1, c nw sw se, 10-15-4w, sd 3690 ft.

DICKINSON COUNTY—Gress et al's Sandon 1, nec, 12-15-2e, rig.

TREGO COUNTY—Dixie & Amerada's Reitmeyer 1, c ne ne, 19-14-21w, dr 2185 ft.

DOUGLAS COUNTY — Steinbushel et al's Unknown 1, sw ne nw, 34-14-21e, ru.

ELLIS COUNTY—Streeter & Stearns' Laiker 1, sw ne, 26-12-20w, sd 1294 ft.

TREGO COUNTY—Phillips' Spitz 1, se c 24-12-25w, show oil 4160-65 ft dr 4514 ft, est 15 bbl day. Day's Guyler 1, c sw ne ne, 36-12-21w, sd and spd.

ELLIS COUNTY — Central Commercial's Helms 1, se ne, 2-12-20w, lcn.

TREGO COUNTY—E. H. Morgan's Whitehair 1, nw se, 9-12-1e, sd 150 ft.

SHAWNEE COUNTY — Jenkins & Scott's Haden 1, ne se, 8-12-14e, sd 750 ft. Jenkins & Scott's Haden 1, se nw, 10-12-17e, sd 550 ft.

ELLIS COUNTY—Byrens et al's Fisher 1, nw se, 4-11-20w, sd 1000 ft.

SHAWNEE COUNTY — Jenkins & Scott's Unknown 1, nw ne, 28-10-15e, sd 985 ft.

JEFFERSON COUNTY—Wichita Oil Co.'s Simpson 1, nw ne, 19-10-17e, ru and sd.

ROOKS COUNTY—Krueger's Steis 1, nw se sw, 12-9-16w, sd 570 ft.

CLAY COUNTY—Chrisler's Tivler 1, swc, 19-8-3e, spd and sd.

GRAHAM COUNTY—Madolin's Unknown 1, c se sw sw, 27-7-26w, spd and sd.

OSBORNE COUNTY — Phillips' Brieve 1, nw se ne, 6-7-12w, td 4320 ft co.

RILEY COUNTY — Derby-Skow Bros.' Lundstrum 1, ne, 32-7-5e, sd 2270 ft. Gray et al's Smith 1, ne se, 30-6-6e, sd 1970 ft.

SMITH COUNTY—Phillips' Clydevale 1, se nw, 23-6-14w, td 4081 ft, cas trble.

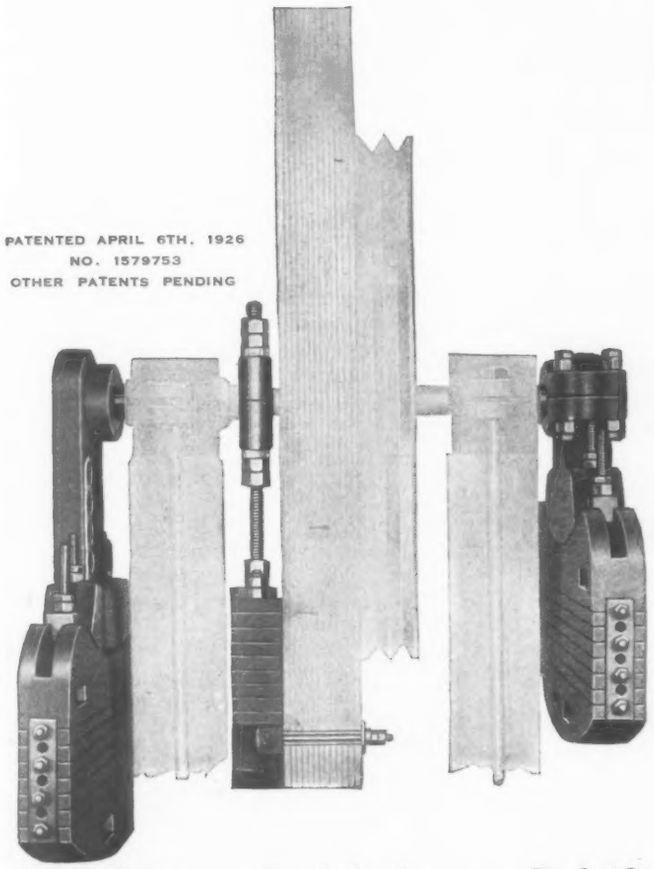
NORTON COUNTY—A. L. Richards' Colby 1, c sw 17-4-21w rig.

WASHINGTON COUNTY—McCool & Vincent's Linn 1, nw ne, 27-4-3e, sd 3100 ft.

LET

OCS

Put a Flywheel on Your Rods



Crank Type Bandwheel or Backside

More Than a Balance

• AN EQUALIZER •

For Any Place
On Any Crankshaft
On Any Rig

AVAILABLE FROM O C S OR LICENSED MANUFACTURERS

Stop Pumping with a "Drilling Motion"

REQUEST BULLETIN 888

THE OIL COUNTRY SPECIALTIES MFG. CO.

COFFEYVILLE, KANSAS

Hynes, California; Sweetwater, Texas; Tulsa, Okla.; Seminole, Okla.
Hillman Kelley, Inc., Los Angeles, California

NORTHERN CALIFORNIA

KERN COUNTY

BELRIDGE—Elmer Oil Co.'s No. 1, 2-29-20, co 3975 ft. J. H. Kennedy's No. 1, 5-29-21, dr shale 1105 ft. K. C. Wallace's No 1, 32-29-21, running 6¼-in cas, td 2575 ft.

BUTTONWILLOW — General Pet.'s N 1, 6-28-23, lcn. Milham Exploration's Kern 6, 8-28-23, m on drill pipe 4950 ft; Kern 7, 5-28-23, new lcn; Kern 8, 5-28-23, new lcn; Kern 9, 5-28-23, lcn; Kern 10, 5-28-23, new lcn.

EDISON—F. M. Sayre's No 1, 5-30-29, dr shale 3300 ft. Shell Oil Co.'s No 2-1, 33-29-29, dr hard sand 965 ft. Texas' Newman 1, 23-29-28, dr sandy shale 5650 ft.

GOULD HILLS—Cast Mira Oil Co.'s Theta 1, 20-29-20, dr shale 2969 ft.

McKITTRICK—Ozena Oil Co.'s Kendon 2, running 6¼-in cas, td 2490 ft. Ohio's M. M. 1, 32-20-22, dr shale 2970 ft. H. L. Whiston's Wisecarver 1, 30-30-22, water not shut off, td 4195 ft; Monarch 1, 34-30-22, rigging rotary.

MIDWAY—Shell's Perris 1-A, 15-32-23, sr 8195 ft. Standard's Mascot 1, 26-32-23, dr 8915 ft. Texas' Gore 4, 21-31-22, dr shale 4028 ft.

ROUND MOUNTAIN — Gerrard and Phillips' No 1, 32-27-29, co 750 ft, td 1420 ft.

SAN EMIDIO—H. A. Bardeen's Klipstein 1, 18-19-23, lcn; Ramsey 1, 10-10-23, lcn.

SHALE HILLS—Girard Oil Co.'s No 1, 28-26-18, dr shale 115 ft.

TEMBLOR HILLS—Shell's Gonyer 1, 32-32-23, co 1785 ft.

WEED PATCH—Shell's Porter Day 1, 29-30-29, lcn.

SANTA BARBARA COUNTY

ARROYA PARIDA—Shell's Fithian 1, 18-4-25, dr shale 2215 ft.

BUELL CANYON — Union's Buell 1, dr gray sand 3466 ft.

CARPENTERIA—Continental's Kitty Baillard 1, dr shell 500 ft.

CASITAS—Standard's Shepard 1, 26-4-25, dr shale 1106 ft.

GOLETA—F. G. Anderson's Langman 1, 10-4-28, dr gray sand 4728 ft. Walter Barnhart's Pomatto 1, 1-4-29, co 2177 ft. Carrey and Adam's Montecito 1, 1-4-28, dr hard sand 2865 ft. General Pet.'s James 136-1, dr shell 978 ft; More 2, dr shale 4178 ft. Standard's Edwards 2, dr sand 2707 ft. U. S. Pet.'s Permit 141-1, dr hard brown shale 505 ft.

LOMPOC — Ohio's Hollister 1, 2-6-34, dr hard sand 865 ft. Prairie Oil & Gas Co.'s Shyvers 1, new lcn.

LOS OLIVAS — L. B. Tannehill's McGilvray 1, 23-7-31, dr shale 3330 ft.

ORELLA — General Pet.'s Erburu 3, running tubing, td 1603 ft. Indian Pet. Co.'s Permit 174-1, rig. Oakburn Oil Co.'s Wagner 170-1, dr shale 980 ft. Parson 171-1, dr shale 212 ft.

POINT CONCEPCION—Standard's Gerber 1, dr hard sand 3890 ft.

SAN MARCOS — California Oil Properties' Fortine 1, 3-4-28, will abn, td 4005 ft.

SANTA MARIA—Shell's Carega 1, dr 4875 ft.

VENTURA COUNTY

FILLMORE—Frank Oil Co.'s No 1, 35-4-20, co 2075 ft.

CONEJO—Triunfo Oil Co.'s No 1, 24-1-19, dr gray sand 1628 ft.

OJAI—Continental's Sulphur Mountain 3, 21-4-22, testing oil showings, td 6225 ft. Gilmore-Bishop's Pirie 1, dr shale 2185 ft. M. K. T. Oil Co.'s No 1, 13-4-22, dr brown shale 4550 ft.

OXNARD—Shell's Leonard 1, abn 3600 ft; Terry 1, abn 3160 ft.

PIRU—Bolsa Chica Oil Corp.'s Snow 1-A, 4-4-18, dr shale 1728 ft. E. A. Fennell's Lankershim 1, 13-4-19, dr shale 950 ft.

HOPPER CANYON—George H. Hadley's No 1, 13-4-9, dr 455 ft.

RINCON CREEK—Associated's Snowball 1, 19-4-24.

SANTA PAULA—Empire Oil Co.'s Steen 4, dr shale 2905 ft. San Pedro-Pt. Fermin Syn's Kellerman 1, 13-4-21, pumping oil and sand, td 3365 ft.

SATICOY—Standard's Citrus 5, 10-2-22, re-dr 8404 ft.

SOMIS—Shell's Everett 1, 23-2-20, dr 330 ft.

SIMI—Richfield's No 42, 36-3-18, bailing 2320 ft.

TIMBER CANYON—Southern Exploration Co.'s No 1, 18-4-20, rigging to deepen.

MISCELLANEOUS

FRESNO COUNTY — Currency Pet. Co.'s No 1, 28-21-14, dr sand 3328 ft. Western Gulf's Welsh 1, 26-15-12, dr shale 765 ft.

KINGS COUNTY—H. B. Porter's No 1, 9-24-17, dr brown shale 2669 ft. J. E. O'Donnell's No 1, 7-23-20, 11¾-in cas re-cmt 1730 ft, td 1882 ft.

MENDOCINO COUNTY—Twin State Oil Co.'s Soldani 1, 14-12-17, dr shale 2000 ft.

MONTEREY COUNTY—Pacific Inland Oil Co.'s Braden 1, 19-23-15, dr rock 100 ft Standard's Piedmont 1, 23-22-7, dr shale 3535 ft. Union's Paige 1, 8-22-8, dr brown shale 2758 ft. Shell's Dudley 1, 15-22-9, swabbing, td 5465 ft.

SAN LUIS OBISPO COUNTY—Panorama Oil Co.'s Panorama 1, 7-31-21, pulling 6¼-in cas, td 4010 ft. Midwest Oil Co.'s Hatley 1, 34-31-15, dr shale 3428 ft. Pismo Dome Oil Co.'s Pricco 2-A, 5-31-13, sr 1280 ft; No C-1, 5-31-13, fsh 1105 ft. San Luis Syn.'s No 1, 29-31-13, dr hard sand 3655 ft. Texas Pacific Coal and Oil Co.'s No 1, 25-32-14, co 4000 ft. Union's Chandler 1, 12-32-14, dr shale 5335 ft; Rust 1, 34-32-15, abn 4155 ft.

TULARE COUNTY—Terra Bella Oil Co.'s Gardiner 1, 35-22-27, 8-¼-in cas cmt 830 ft, td 865 ft. Toy White's No 1, 8-23-26, dr shale 3490 ft.

SOUTHERN CALIFORNIA

BANDINI—George F. Getty's Kellam 1, dr shale and streaks sand 3125 ft.

CLEARWATER—Clearwater Pet. Co.'s Candler 1, dr shale 4528 ft.

CALABASAS — J. W. Martin's No 1, dr gray sand 1010 ft.

COMPTON—California Well Drilling Co.'s Del Amo 1, dr out cmt, td 8500 ft.

EL MONTE — Morgan West's Sing 1, dr shale 1775 ft.

LA HABRA—R. C. Rucker's Grazide 1, co 3270 ft. Union's Sansinena 11, re-dr 1530 ft.

NEWHALL—Consolidated Oil Co.'s Hammond 1, 12½-in cas cmt 1145 ft. Pico Dome Oil & Gas Co.'s No 1, 14-3-16, will deepen

for rotary drilling . . *use* "TRU-LAY"

Because each wire and strand is *preformed*. Tru-Lay Rotary Drilling Lines will spool perfectly on the drum. Internal wire rope stress is eliminated—abrasive wear is reduced—no back-twists are necessary.

Tru-Lay *Preformed* Wire Rope is more flexible to handle than ordinary wire rope—the "crankiness" is removed before you get it.

Install a Tru-Lay Rotary Drilling Line. Compare its cost *per ton mile* with any other wire rope you have used.

Made by the
AMERICAN CABLE COMPANY, *Incorporated*
New York Central Building, 230 Park Avenue, New York, N. Y.
District Offices: Emlenton, Pa.; Tulsa, Okla.; San Francisco, Calif.
An Associate Company of the American Chain Company, *Inc*
Canadian Licensed Manufacturers:
Dominion Wire Rope Co., *Limited*, Montreal
Canada Wire & Cable Co., *Limited*, Toronto

Sold in Field Stores by Eastern Oil Fields:
NEW MARTINSVILLE SUPPLY CO., New Martinsville, W. Va.
LLOYD SMITH CO., Bradford, Pa.
SLICKER PIPE, TOOL & SUPPLY CO., Knox, Pa.
MITCHELL & GRAHAM, Emlenton, Pa.
MASSETH PACKER & MACHINE CO., Butler, Pa.
LAWRENCEVILLE MACHINE CO., Lawrenceville, Ill.
Mid-Continent Oil Fields:
ATLAS SUPPLY CO., Tulsa and Muskogee, Okla. Fort Worth, Texas.
FARLEY MACHINE WORKS CO., Arkansas City, Kans.
MID-CONTINENT SUPPLY CO., Houston, Texas.
Rocky Mountain Oil Fields:
COLONY CORPORATION, Rock Springs, Wyoming
California Oil Fields:
AMERICAN CABLE CO., *Inc.* San Francisco, Calif.
W. B. CORNISH, 3924 Baker Ave., Bell, Calif.
ALCO OIL TOOL COMPANY, Compton, Calif

American Cable Company
Tru-Lay WIRE LINES Crescent

Diesel Exhaust Lines Require Corrosion-Resisting Toncan Iron Pipe

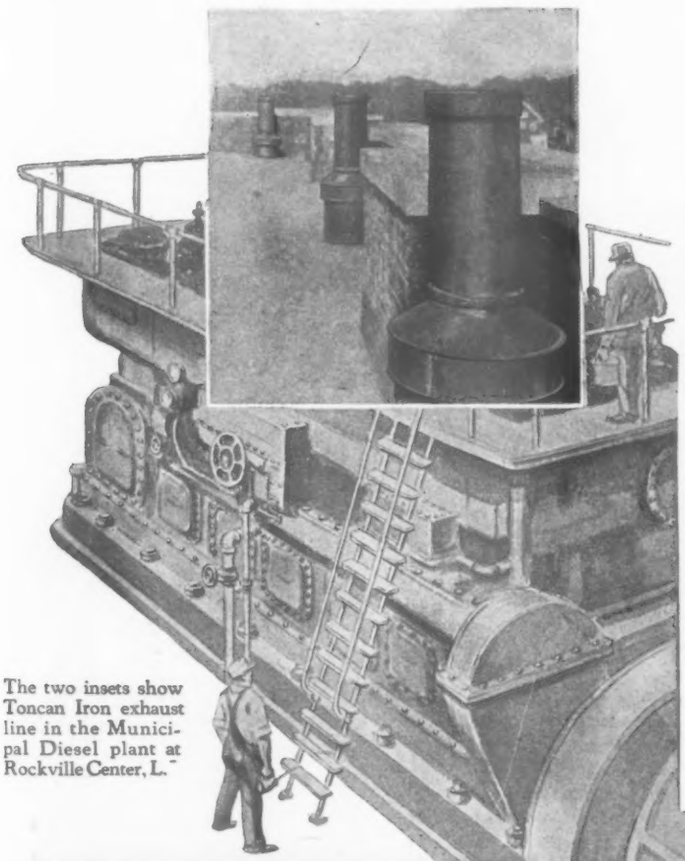
TONCAN Iron contributes an additiona economy to the Diesel plant.

The hot sulphur exhaust gases quickly destroy exhaust lines of ordinary pipe materials, and cause frequent, costly pipe replacements.

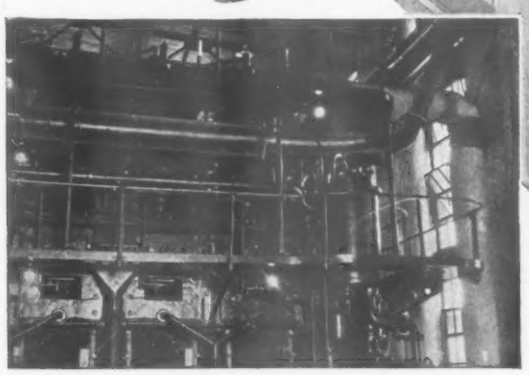
Toncan Iron has solved this problem. It is being widely adopted in Diesel plants because of its outstanding ability to resist this severe corrosion, and eliminate frequent replacements due to the failure of ordinary pipe materials.

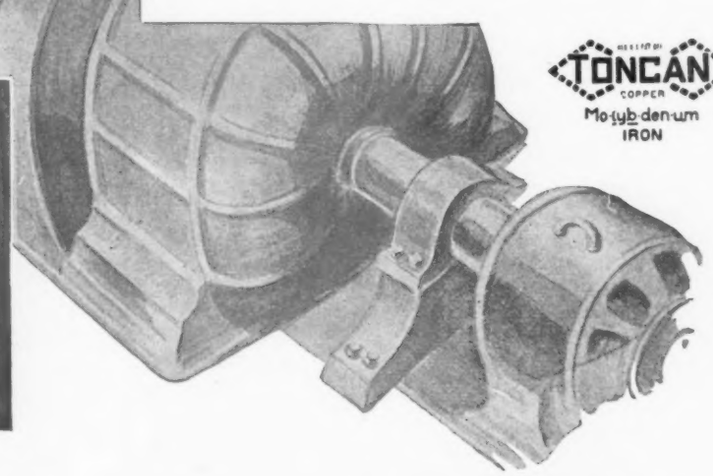
Toncan Iron possesses far greater resistance to corrosion than any other ferrous metal from which commercial pipe is made.

Specify Toncan for every piping requirement.



The two insets show Toncan Iron exhaust line in the Municipal Diesel plant at Rockville Center, L. I.





CENTRAL ALLOY STEEL CORPORATION
MASSILLON, OHIO

World's Largest and Most Highly Specialized Alloy Steel Producers
Makers of Agathon Alloy Steels

Cleveland Detroit Chicago New York St. Louis
Syracuse Philadelphia Los Angeles Seattle
Cincinnati San Francisco
Export Office: New York Central Building, New York, N. Y.

TONCAN COPPER Mo-lyb-den-um IRON

TONCAN COPPER MO-LYB-DEN-UM IRON

from 650 ft. Pioneer Pet. Co.'s Cannon 1, 14-3-16, rigging up.

PIRU—Coastline Oil Co.'s Mazie 1, bailing oil and water, td 2540 ft.

POINT DUME—Raleigh Oil Co.'s Rindge 3, dr hard sand and shell 3780 ft.

POMONA—Grimes-Girrard's No 1, dr hard sand 400 ft.

PUENTE—The State Co.'s Richfield 1, dr gray sand 4200 ft. Western Gulf's Diamond Bar 1, dr hard sand 2800 ft.

RICHFIELD—Weber and O'Brien's Brown 1, fsh for tubing, depth not known.

SOUTH LOS ANGELES—Burlingham Pet. Corp.'s Hardy 1, sd 2680 ft. William Diller's No 1, dr shale 3778 ft.

TELEGRAPH CANYON—Union's Rimpau 1, dr granite 2800 ft.

WHITTIER—Tureco Oil Co.'s Cole 1, lcn.

WILMINGTON—Archer Oil Co.'s Watson 1, 17-4-13, fsh 5575 ft.

RIVERSIDE COUNTY — Hall Pet. Co.'s Watt 2, 23-7-3, sd 675. Hemet Pet Co.'s Ward 1, dr shale 3550 ft.

SAN BERNARDINO COUNTY—Keck and Hall's Belyea 1, flowing gas, td 1120 ft. J. W. Sherman's Rancho 1, dr shale and oil sand 850 ft. Marcell Pet. Co.'s Marie 1, dr hard sand 1515 ft. Western Pacific's No 3, showed water td 3378 ft.

SAN DIEGO COUNTY — Borderland Exploration Co.'s No 1, 9-in cas cmt 2185 ft; Point Loma 1, circulating 515 ft.

MOUNTAIN STATES

COLORADO

ADAMS—N. M. Slatt, Hill 1, se 27-35-64w, co 1004 ft.

ARAPAHOE—McDeb Drlg. Co., Fitzsimmons 1, se 7-4s-66w, fsh 5090 ft.

ARCHULETA—Standard of Colorado, Inc., Fitzhugh 1, sw 34-33n-1e, ready to spud.

BENT—Continental, Pipe Springs 1, se 27-27-49, ur 5504 ft.

BOULDER—Reliance Oil Co., Erickson 1, nw 33-2n-70w, sd 345 ft.

DOLORES—Transcontinental, Glade 1, nw 30-41n-16w, sd 5900 ft.

DELTA—Crawford O&G Co., McKissen 1, ne 28-15-91, prep to resume 970 ft.

ELBERT—Belmont Oil Co., Maher 1, sw 4-6s-59w, standardizing 3720 ft.

FREMONT—Westerville Oil Co., State 1, nw 16-18-69, sd 1214 ft. Continental, Steinmeir 4, se 35-18-70, dr 480 ft. Standard of Colo., Tiger 1, nw 26-19s-89w, sd 1656 ft. Hammond & Rosco, Beltrame 1, sw 1-19s-70, sd 1800 ft.

JACKSON—Midwest, Rich 21X, nw 9-6n-80w, sd for winter 3381 ft. P. & R., Hendershot 1, ne 2-6n-8e, sd for winter 3610 ft.

JEFFERSON—Ruby Hill O&G Co., Braden 1, se 24-4s-69w, to ur to 3578 ft.

HUERFANO—Parker Club & Kinney-Coastal, Fee 1, 4-28s-68w, set 5-3/16-in. 3924 ft. Elliot et al, Abeyta 1, nw 31-27s-65w, lcn.

LAS ANIMAS—Trinidad Dev. Co., Flontz 1, sd 23-32-63, set 5-3/16-in. at 2700 ft. Helium Co., Cowdery 1, nw 35-29s-60w, mvg in.

LARIMER—Mosher et al, Reed 1, nw 28-4n-69w, dr 3500 ft. Barrows et al, Barrows 1, se 7-11-68, sd 2310 ft. Continental, Scott 5, nw 6-19n-68w, dr 1200 ft. Deininger et al., Rembey 1, ne 35-4n-70w, resum 354 ft.

LA PLATA—Royal P. & R., Red Mesa 1, ne 27-33n-12w, sd 360 ft. Detroit Oil Ass'n, Olbert 1, sw 9-35n-12w, dr 2040 ft.

LINCOLN—Kelly Oil Co., State 1, ne 36-14n-57w, sd 2970 ft.

MESA—Argo Oil Co., Hoel 1, ne 23-8s-104w, ur to 2712 ft.

MOFFAT—McLaughlin et al, Wms. 1, 2-3-92, sd 4385 ft. Vermillion O&G Synd., 1, se 23-9n-100w, sd 642 ft. Texas Prod. Co., Berlin 1, ne 18-12n-100w, sd 2347 ft. Midwest, Hannawalt 24, se 4-6n-92w, dr in brown shale 825 ft. F. McCormick, Sales 1A, se 28-4n-92w, sd 3190 ft.

PUEBLO—Beulah Dome Co., Hedland 1, sw 7-23-67w, sd 932 ft.

RIO BLANCO—Texas Production, Potter 1, se 30-2n-69w, coring 5665 ft. White Eagle, Fordson 1A, sw 9-2s-96w, ur to bottom at 2905 ft.

ROUTT—Gillespie et al, Omholt 1, se 29-4n-79w, ready to spud. Ruby Hill O&G Co., nw 17-6n-86w, plug back from 3127 to 2250 ft, pipe trouble.

WASHINGTON—Platte Valley Pete Corp., Patterson 1, se 24-6n-61w, sd 4902 ft with gas show.

YUMA—Phillips Pete, Andrews 1, nw 3-25-42w, dr 4885 ft. Major Pete Co., Black Wolf 1A, 7-2s-43w, sd 1535 ft.

IDAHO

BANNOCK — Norton Bros. et al, Marsh Valley 2, lot 5, sec 19-10s-37e, sd 2600 ft.

CLARK—Monida Oil Co., Beaver Dome 1, nw 32-14n-36e, dr 1005 ft.

POWER—Gem State Pete Co., Arbon Valley 1, nw 2-11s-33e, sd 3800 ft.

TETON—Grand Teton Oil Co., Horseshoe 1, se 33-5n-44e, carry 10-inch to 1923 ft. Teton Valley Land & Leasing Co., Bevan 3, se 28-5n-44e, install new engine, td 1376 ft.

NEW MEXICO

CHAVES—Warman Oil Trust's Blackdom 1, ne 27-13s-24e, dr 935 ft. Cactus Development Co.'s Sullivan 1, se 14-10s-26e, sd 2065 ft.

DE BACA—Matador Oil Co.'s Wood 1, sw 6-4n-20e, wait pipe 2735 ft, td. Pittsburgh Oil Co.'s State 1, ne 16-1s-27e, sd 4506 ft.

GUADALUPE — Los Angeles-Hollywood synd.'s McMillen 1, sw 24-5n-16e, may change lcn.

LEA—Texas Prod. Co.'s State 1B, lot 5, sec. 1-21s-33e, water at 3750 ft. Empire Gas & Fuel Co.'s State 3B, se 5-21s-35e, dr 4664 ft. Empire's Lindley 2, se 14-25s-36e, dr 715 ft. Continental's Sholes 2, nw 13-25s-36e, rigged. Continental's State 2, 1-21s-33e, dr 3489 ft. Continental's Myers 1, nw 28-22s-36e, sdtr tools 3765 ft. Continental's State 1, nw 1-21s-33e, dr deeper from 3789 ft. Walker et al's Terry 2, se 10-19s-38e, sp and sd. Humble O. & R. Co.'s Lindley 3A, sw 13-25s-36e, dr 450 ft. Humble's Koonce 1, ne 14-25s-36e, dr 1260 ft. Rector Oil Co.'s King 1, ne 26-25s-32e, sd 4089 ft. Magnolia Pet. Co.'s Lindley 1X, ne 26-25s-36e, dr 3030 ft. Bordages et al's Hughes 1, 27-19s-38e, sd 4012 ft. Morton et al's State 1, nw 32-11s-38e, sd 3725 ft. Barnsdall Corp.'s 1, se 28-16s-38e, dr 4740 ft. Cranfill & Reynolds' State 1C, sw 16-23s-36e, dr 1562 ft. Cranfill & Reynolds' State 1D, lot 6, 3-21s-33e, dr 910 ft. Midwest's Wright 6, sw 14-19s-38e, dr 4481 ft. Fisher & Lowrie's State 1, nw 11-18s-36e, standardizing 2100 ft. Texas Pacific's State 3, nw 21-23s-36e, dr 3400 ft. Penn Oil Co.'s State

"Anchor" Puller-jack
TRADE MARK

A one-man outfit

The Busy-Bee Tool in the Oil Country and the Handiest

Certified 5-Ton Pull

PATENT APPLIED FOR

KEEP an "Anchor" Puller-jack handy at every job. One man shifts or lifts heavy machinery, yanks out mired motor trucks, pulls and lines up pipe, tightens guy lines, pulls boiler tubes, pulls belts for splicing, speeds up construction and erection work. Positive action, fool-proof, operates in any position.

At your supply jobbers; $36.00 complete f. o. b. works, Reynoldsville, Pa. Includes 15-ft. load chain (or longer lengths quoted) 3½-ft. tail chain, sheave block. Does all jobs requiring a strong pull, a long pull. Write for Bulletin W.

Sheave block included

Loading heavy drilling machinery on truck

T. H. EDELBLUTE COMPANY
Oliver Building Pittsburgh, Pa.

Also Manufacturers of "Anchor" Track Braces and "Anchor" Rerailers

THERE are many reasons why oil men standardize on Cyclone Fence for enclosing refineries, tank farms, bulk stations and other oil property.

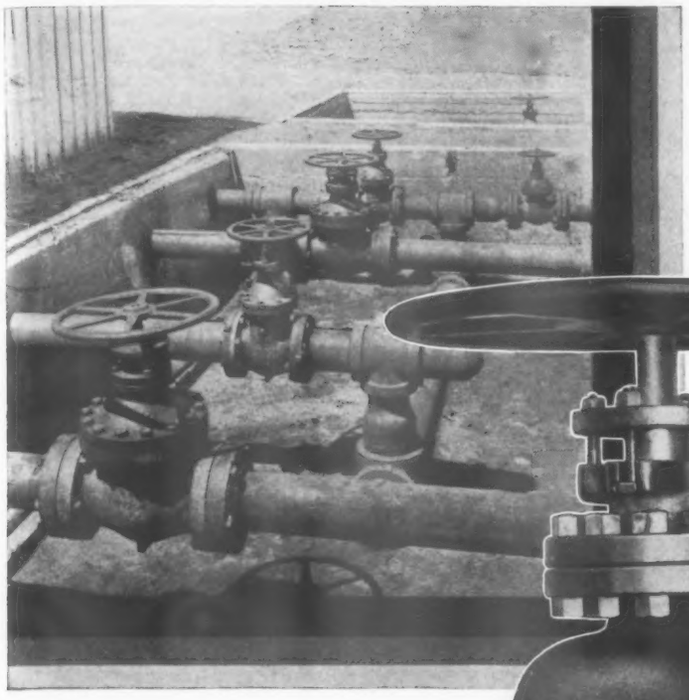
Cyclone Fence lasts many years because it is made of copper-steel heavily galvanized. Fabric is hot-dip galvanized by the "Galv-after" process developed by Cyclone. This process insures a smooth, dense coat of pure zinc. No chance for rust to start. Erected on H-column posts—the strongest and most durable posts made. Our own trained erection crews install Cyclone Fence everywhere. Write nearest offices for information.

All chain link fence is not Cyclone. This name plate identifies the genuine Cyclone Fence.

CYCLONE FENCE COMPANY
Subsidiary of United States Steel Corporation
Works and Offices: Fort Worth.
Direct Factory Branches and Warehouses: Houston, Dallas, Tulsa.
Also Sales offices: New Orleans, Shreveport.

Cyclone Fence
REG. U.S. PAT. OFF.

(C) C. F. Co. 1930

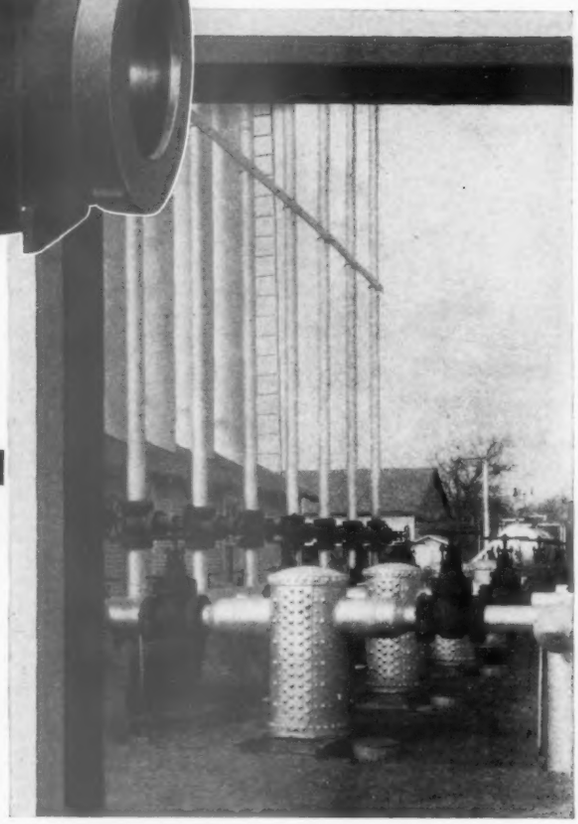


ALL ELECTRIC STEEL DRILLING THROUGH GATE VALVE

Gate Valves for every service in the Gas and Oil Industry. For the Producer, the Pipe Line, the Gasoline Plant.

WESTCOTT VALVES

12-inch seat opening by 9⅝-inch API casing pipe—2500 lbs. working pressure. Stainless steel stem. This valve is made in the following working pressures —1200 lbs.—1600 lbs.—2000 lbs.—2500 lbs.—3000 lbs. Tested to double working pressure.



WESTCOTT VALVES

Manufactured by the Westcott Valve Company
East St. Louis, Ill.

Manufacturers of products for the Oil and Gas Industries exclusively.
Full stocks carried in East St. Louis and all stores of the Continental Supply Company

1, ne 21-19-36, dr 5042 ft. Walker et al's Terry 2, se 10-19s-38e, sp and sd. Harrison et al's State 1, sw 35-18s-38e, sd 276 ft. Ohio's State 1, se 32-18-38, rig. Ohio's 15-22-36, cellar.

McKINLEY—J. W. Halsell's Santa Fe 1, 17-18s-9w, dr 3085 ft. San Juan Coal & Oil Co.'s 1, se 21-18n-9w, sd 2205 ft. Williams et al's Santa Fe 1, sw 19-18n-8w, wtg cas 1900 ft.

RIO ARRIBA—Berringer et al's Hartman 1, ne 8-29n-7w, prep to resume 825 ft. San Juan Pet. Co.'s Gov't 1, sw 14-30n-7w, sd 270 ft.

SAN JUAN—Dorothy Oil Co.'s Terwilligan 2, 29-30-9w, sd 1170 ft. Southern Union Gas Co.'s Day 1, sw 20-28n-10w, sd 1450 ft. Blackrock Oil Co.'s Blackrock 1, se 11-25n-13w, wtg on extension, td 1550 ft. Grethouse et al's Roderick 1, se 11-22s-14w, sd 1000 ft. Childers Dr. & Pr. Co.'s Westwater 2, nw 24-31-16w, sd 2525 ft. Reserve Oil Co.'s Shaffer 2, ne 1-21n-14w, sd 780 ft. Southern Union Gas Co.'s Garland 1, ne 11-28n-11w, sd 3100 ft. H. L. Williams' Bowman 1, ne 30-30n-15w, dr 2460 ft.

SAN MIGUEL—Pioneer O. & G. Co.'s Thunderbird 1, nw 14-15n-16e, sd 2251 ft. Starr Oil Co.'s Adams 1, ne 25-17n-17e, sd 3300 ft. Cibola Pet. Co.'s Crow 1, se 9-13n-14e, ur to 320 ft. Hershfield Dev. Co.'s Cabra Springs 1, ne 21-12n-22e, sd 947 ft. Benedict et al's Wilson 2, nw 25-17n-16e, ready to sp.

SOCORRO—Lockhart & Co.'s Stackhouse 1, 14-3s-6e, fsh 1910 ft.

TORRANCE—Williams et al's Staplin 1, ne 16-8n-10e, dr 1715 ft.

VALENCIA—Rio Puerco Oil Co.'s N. M.-Ariz. Land Co. 2, ne 13-6n-2w, wtg pipe 3145 ft. Acme Oil Co.'s N. M.-Ariz. Land Co. 1, 26-6-3, sd 4535 ft. Harlan et al's Harlan 1, 5-6n-2e, dr 3415 ft.

MONTANA

BIG HORN—Montana Prod. Co.'s Lynde 2, se 21-6s-35e, sd 3056 ft.

CARBON—Atlantic Oil Co. 2, 20-7s-24e, sd in Madison 1840 ft.

CARTER—Carter & Co. 1, nw 11-2n-58e, plugged back to 2030 ft to test. Montesota Oil & Dev. Co. 1, se 7-8n-58w, set 5 3/16-in at 930 ft. Poss Petroleum Corp., nw 7-8n-57w, sd 2505 ft.

CASCADE—Piegan et al, 36-20n-3w, dr 1900 ft. Eden Oil Co. 1, sw 27-18n-4e, sd 1325 ft.

CUSTER—Montana Belle Oil Co. 1, ne 28-8n-45e, sd 4652 ft.

DANIELS—Whitetail Oil Synd. 1, nw 10-36n-50e, sd 1467 ft.

FERGUS—Melton Corp., sw 24-21n-17e, dr 2650 ft.

GALLATIN—California Co.'s Ringling 1, se 35-5n-7e, dr 3343 ft.

GARFIELD—Montana Corp.'s State 1, ne 36-16n-38e, dr 2255 ft.

GLACIER—Kootenai Oil Co. 1, 13-35n-6w, sd 250 ft. Cosmos Oil Co.'s Hannah 1, sw 22-36n-12w, rig up. Rim Rock Oil Co.'s Brown 1, se 29-35n-5, rig up.

LIBERTY—Square Deal Oil Co.'s Federal Land Bank 1, 1-32n-7e, sd 3470 ft. Thompson's Thompson 1, sw 7-34n-4e, sd 2314 ft. Northland Oil & Gas Co.'s Yurman 1, 35-33n-6e, sd 1030 ft.

MUSSELSHELL — Minnesota-Flatwillow's Ivanhoe Dome 1, 7-11-31, sp and sd.

PETROLEUM—Minnesota-Flatwillow 2, sw 5-12n-25e, sd 1558 ft. Oregon-Flatwillow Oil Co. 1, 3-13n-26e, sd 200 ft.

PONDERA—Valier-Williams Oil Co.'s Anderson 1, ne 7-29n-4w, abn 3100 ft. Hiland-Van Daele's Kendall 1, ne 35-30n-3w, ur cas 4215 ft. Miller Bros.' Bruins 1, nw 17-28n-1w, rig up.

ROSEBUD—Prairie O. & G. Co.'s N. P. 1, 9-10n-39e, sd 2310 ft. Prairie's N. P. 3, 26-10n-39e, sd 2073 ft. Prairie's N. P. 4, 28-10n-38e, sd 65 ft.

SHERIDAN—Cheyenne O. & G. Co., nw 15-36n-53e, sd 1400 ft, waiting for 10-in.

SWEETGRASS—Shoshone Consolidated's N. P. 1, nw 23-2n-15e, sd 5805 ft.

TETON—Andover Oil Co.'s Carlson 1, ne 5-24n-4w, sd 150 ft. L. B. O'Neil's State 1, nw 16-25n-5w, sd 2305 ft. Newman et al's Fitzgerals 1, se 26-32n-1w, rig up. Rocky Mtn. O. & G. Co.'s Salmont 1, ne 4-23n-8w, sd 852 ft. Mitchener et al's Rondas 1, sw 9-23n-1w, sd 2170 ft, to abn. Earl Oil Corp. 1, ne 22-22n-82, sd 660 ft.

TOOLE—Monalta Oil Co.'s Buckley 1, se 1-37n-4w, try ur 8-in at 2400 ft. Monalta Oil Co.'s Buckley 2, sw 1-37n-4w, rig. Anaconda Pet. Co.'s Barthelote 1, ne 19-36n-2w, sd 1635 ft. Mahan et al's Lee 1, 10-31n-1w, sd 2264 ft. Roxana Drlg. Co.'s Toole 1, 22-36n-1e, sd 1700 ft. John Thomas et al's Buckley 1, ne 1-37n-4w, sd 150 ft. Black Gold Pet. Co.'s Syrs 1, sw 30-36n-28e, rigging. F & F Oil Co.'s Swenson 1, se 12-33-1e, rigging. Mid-Continent O. & R. Co.'s Farbo 2, ne 2-37-4w, rig.

WYOMING

BIG HORN—P & R.'s Gov't 3, 24-56-98, sd 4183 ft. Westland Oil, Inc., 24-54-95, sd 360 ft. Wisconsin Holdings, 4-55-97, sd 665 ft. Yellowstone Pet. Co., 7-57-97, dr below 2400 ft.

CARBON--P & R., 2-19-88, sd 4562 ft. C. E. Bivens et al's Baggs 1, 35-13-92, sd 2200 ft.

FREMONT—Premier Oil Co., &-28-93, sd 1221 ft.

HOT SPRINGS — Midwest, 8, 6-44-98, sd 1052 ft. Ohio Oil Co.'s Smith 1, 9-46-99, dr 3120 ft. Gebo Consolidated, 1, se 23-44-95, sd 1245 ft. C. F. Robertson et al, se 17-43-92, sd 450 ft.

JOHNSON—United Oil Co., 7-47-82, sd 360 ft. R. C. Tarrant, 4-43-82, sd 600 ft. Dome Synd., 3, 4-43-82w, sd 720 ft.

LINCOLN—Midwest's Grey River 1, 25-37-117, sd 1731 ft. Midwest's Waterfall 1, 35-22-115, sd 3510 ft. Mtn Oil Corp., 36-25-115, sd 100 ft.

PARK—P & R.'s Pitchfork 1, 14-48-102, sd 1400 ft. Henderson Prod. Co., 31-58-99, sd 3000 ft. Ohio Oil Co.'s Burlington 1, 21-53-101, cemt 4312 ft. Resolute Oil Co., 17-27-101, sd 4280 ft. Cody Pet. Corp.'s Danker 1, sw 22-57-98, sd 2697 ft.

SWEETWATER—Mtn Fuel Supply's Tucker 1, 18-13-99, sd 2900 ft. Mtn Fuel Supply's Cappers 1, 2-9-104, sd 3200 ft. Mtn Fuel Supply's U. P. 1, 13-19-104, sd 3100 ft.

UINTA—California Co.'s U. P. 1, 7-17n-119w, dr 4615 ft.

WESTON—Gose Synd., 28-47-65, sd 4004 ft.

ARKANSAS

ASHLEY COUNTY—Ark. Fuel Oil Co.'s Crossett Lbr. Co. 1, 1-19-7, r to bottom, td 3235 ft.

COLUMBIA COUNTY — L. E. Parker's

HEAVY LOADS · · · BAD ROADS
but a MARTIN *always comes through*

Let roads be good, bad or indifferent. No matter what their conditions, no matter how heavy the load, a Martin will always come through. All over the world, wherever they are in use, you'll hear the same thing said. "A Martin never fails."

Seventeen years of manufacturing experience insure their excellence. Nothing but the best grade of oak and hickory is used in their construction—*reinforced with steel.* A patent adjustment on tongue and coupling enables you to keep the wheels in line so that they will track at all times. This, with its easy turning qualities, enables you to carry greater loads with less power. No task is too great for a Martin. It always comes through.

TRAILERS

There is a Martin body or trailer to fit any truck up to five tons. Made with the same superior materials and workmanship as Martin Wagons . . . and, like them, the result of seventeen years of manufacturing experience.

"MARTINS HAUL ANYTHING"

MARTIN WAGON CO.

LUFKIN, TEXAS

THE experience gleaned in the accumulation of an estate is also necessary for its proper distribution . . . . could your wife and children derive the benefits you intend for them if they have to carry all the responsibilities of your estate when they are inexperienced in such details? . . . . Even with the necessary experience you wouldn't care to burden them with these complicated matters when you can place them under the experienced management of a thoroughly responsible trust institution . . . . The cost is no greater than that of an individual . . . . Write or call on us about your estate problems. Our Trust Officers will discuss the matter in strictest confidence with you.

The Second National Bank

Main at Rusk

Houston, Texas

A HIGH PRESSURE PUMP By VIKING

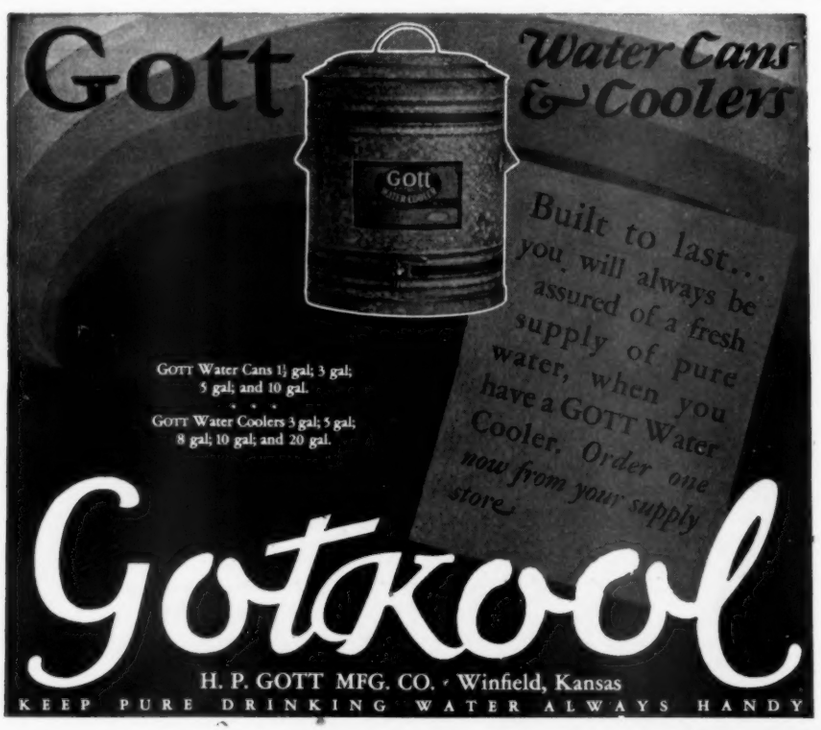
Made in 50, 100 and 200 gallons per minute capacities.

Mfr'd by
VIKING PUMP CO.

Extra heavy construction throughout—equipped with ball bearings—insuring smoother operation and less wear.

The friction clutch as illustrated above enables the pump to be accelerated smoothly and evenly.

SOUTHERN ENGINE & PUMP COMPANY
HOUSTON, TEXAS


Gott
Water Cans & Coolers
Built to last... you will always be assured of a fresh supply of pure water, when you have a GOTT Water Cooler. Order one now from your supply store
GOTT Water Cans 1½ gal; 3 gal; 5 gal; and 10 gal.
GOTT Water Coolers 3 gal; 5 gal; 8 gal; 10 gal; and 20 gal.
Gotkool
H. P. GOTT MFG. CO. · Winfield, Kansas
KEEP PURE DRINKING WATER ALWAYS HANDY

HOTEL BRISTOL

129 WEST 48TH STREET
NEW YORK

Most conveniently located—only a few minutes walk to all shopping and amusement centers—yet quiet

Famous Table d'Hote Restaurants
Luncheon 50c **Dinner $1.00**
Also a la Carte Service

Room, Single $2.00—Double $3.00 Per Day
with
Bath, Single $3.00—Double $5.00 Per Day

Franks 1, 25-19-22, sd 2831 ft. Williams et al's Fullenwider 1, 12-17-22, rigged up wo.

CLEVELAND COUNTY—Craver & Walker's Fee 1, 33-11-9w, sd 60 ft.

CLEBURNE COUNTY — Cosden Oil Co.'s Donithan Lbr. Co. 1, 19-9-10, dr shells and shale 1500 ft.

DREW COUNTY—McClintock & Goedka's Ogle 1, 33-13-5, arr resume dr in new hole 1810 ft, td old hole 2530 ft.

FAULKNER COUNTY—Gold Creek O&G Co.'s Stermer 1, 17-4-13, ta 3872 ft; Stoermer 2, 17-4-13, sp. no report.

FRANKLIN COUNTY — Ozark Nat. Gas Corp.'s McElroy 1, 15-8-27, arr plug back, td 3100 ft.

GARLAND COUNTY—H. H. Given's Garrett 1, 1-13-19w, sr gray sandy lime 3402 ft.

GRANT COUNTY—Jones & Watkins' Meek 1, 5-4-11, ta 1400 ft.

JOHNSON COUNTY—Ark. La. Pipe Line Co.'s Patterson 1, 14-10-14, set 13⅜-inch cas 1500 ft, dr hard lime 1980 ft. Blackwell O&G Co.'s Wyver 1, 21-8-25, ta 5360 ft.

LOGAN COUNTY—M. W. Gressom's Perk 1, 21-8-24, lcn.

LAWRENCE COUNTY — Marguerite Dev. Co.'s Broadway 1, 31-17-1, lcn.

LITTLE RIVER COUNTY—Grote et al's Allen 1, 31-12-31, ta 2941 ft. C. F. McDonald's Black 1, 12-13-28, sd 1965 ft. Buck Oil Co.'s Taafe 1, 23-21-32, dr 2200 ft.

MADISON COUNTY—Phillips et al's Skinner 1, 11-14-28, arr resume dr, td 1461 ft.

NEVADA COUNTY — Ray Davis et al's Henry et al 1, 10-12-20, rigged up, wo.

OUACHITA COUNTY—Copenhaver et al's Warnick 1, 2-15-17, ta 2190 ft. Anderson & Winner's Buck 1, 7-15-17, arr ds test 2680-90 ft. Artex Oil Co.'s Smith 1, 31-15-17, ta in white sand 3188 ft. McDonald Bros.' Wilson 2, 25-15-18, lcn. A. P. Smith et al's Reynolds 1, 21-14-17, set 6-inch cas 1711 ft, td 1747 ft. La. O. R. Corp.'s Tucker 1, 15-15-19, set 5-3/16-inch cas 2186 ft td arr drill in, td 2239 ft. Magnolia Pet. Co.'s Grayson 1, set 8⅛ inch cas 1466 ft, wosr 800 ft fluid in hole, 50 ft water, td 1478 ft.

PIKE COUNTY—Theo. Davis, Tr.'s Ruth Wilson 1, 25-5s-26w, sd 718 ft.

POPE COUNTY — Cosden Oil Co.'s Mo. Pac. R. R. 1, 13-9-19w, dr out rock to set 12½ inch cas at 2500 ft. Ark. La. Pipe Line Co.'s Harns 1, 22-9-21, sd wo 1825 ft.

PRAIRIE COUNTY—Transcontinental Oil Co.'s Novack 1, 36-2-6, set 8¼-inch cas 2058 ft, dr hard rock 2898 ft.

SCOTT COUNTY — Mansfield Gas Co.'s Norris 1, 6-4n-30w, lcn.

SEBASTIAN COUNTY—Lavaca O&G Co.'s Cason 3, 21-8-30, dk. J. O. Ingram 7, 22-8-30, dr 2700 ft. A. G. Williams, Jr.'s, Patterson 1, 27-8-30, lcn.

ST. FRANCIS COUNTY—Brownlee Drilling Co.'s Whitted 1, 28-4-1, sd 300 ft.

UNION COUNTY — Frank Staples' Ainsworth 1, 8-19-16, sd 2090 ft. Lion O. R. Co.'s McDuffie 1, 32-19-16, ta in red beds 4506 ft. O. W. Estes' Telford 1, 35-17-15, swabbed sw arr deepen td 2330 ft; Felsenthal 1, 2-18-15, sd wo 2191 ft. E. G. Bradham's Craig 1, 6-18-15, set 6-inch cas 2080 ft, dr 2185 ft. H. L. Hunt's Pratt 6, 7-18-15, running sand pump 2210 ft. Al-Cal Oil Corp.'s Haney 1, 1-17-16, sd wo 2234 ft. Malloy & Co.'s Robertson 3, 6-18-15, lcn. Wisinger & Ball's Lacey 1, 6-18-15, set 6⅝-inch cas 2131 ft, dr in with cable tools 2175 ft; Rodgers 1, 31-17-15, set 6⅝-in cas 2170 ft. Malloy & Co.'s Goodwin 4, 36-17-16, set 10-inch cas 110 ft. Lion O. R. Co.'s Ballard 1, rigged up ready to sp. Johnson & Gummer's Cargile 1, 4-18-13, old well, arr deepen, td 3341 ft. Federal Pet. Co. et al's Tillman 1, 9-18-13, lcn. Marine Oil Co.'s Winn Est. B-2, 10-18-13, bldg dk. Simmons 1, 10-18-13, lcn; Simmons 2, 10-18-13, lcn. E. L. Chapman's School District 1, 9-18-13, lcn. Malloy & Co.'s Murphy 1, 1-18-16, lcn.

WASHINGTON COUNTY—Lincoln Lease Holding Co.'s Townsite 1, 30-15-32, sd 1500 ft. C. H. Willoughby's Jones 1, 34-16-30, trying to kill water flow 2150 ft. O'Hara & Shetterley's Boyd 1, 12-16-32, sd 150 ft.

WHITE COUNTY—Letona Synd.'s Letona 1, 35-9-8, set 5-3/16-inch cas, sd 3500 ft.

VAN BUREN COUNTY — J. S. Martin's Scanland 1, 5-9-13, sd 50 ft.

Endlessly useful—

THE "Caterpillar" Tractor, equipped with an All Steel Products Company Side Boom, is being used by the Rayle Construction Company on the Texas Empire Line at Oolagah, Oklahoma. Here are wide tracks to go anywhere —power to handle the pipe when a new line is to be laid, or an old one raised for cleaning. Here is flexibility and versatility — the nimble willingness that makes "Caterpillar" track-type Tractors indispensable out in the field.

Prices—f. o. b. Peoria, Illinois

TEN . .	$1100	TWENTY .	$1900
FIFTEEN . .	$1450	THIRTY .	$2375
SIXTY . . .	$4175		

Caterpillar Tractor Co.

PEORIA, ILL. *and* SAN LEANDRO, CALIF., U. S. A.

Track-type Tractors Combines Road Machinery

(There's a "Caterpillar" Dealer Near You)

CATERPILLAR
REG. U.S. PAT. OFF.
TRACTOR

QUICKEST TIME to Los Angeles

—Over a World-Famed Route

Make your trip to the Oil Equipment and Engineering Exposition, in Los Angeles, March 16 to 23, one of pleasure all the way, going and returning, over the direct, fascinating "Sunset Route"—getting you there in quickest time.

You have your choice of two of America's finer trains, the "Sunset Limited" and the "Argonaut," companions in travel luxury.

The "Sunset Route" is one of the world's most remarkable and picturesque routes . . . go smoothly along the Rio Grande . . . thru rolling plains . . . canyons . . . queerly shaped rocks marked with age . . . Spanish and Indian landmarks . . . prehistoric ruins in Animas and Playas Valleys . . . The Apache Trail, a region rich in prehistoric relics, cliff peaks, and tortuous canyons.

Phone your "SP" agent for information and reservations.

Fine connections with these two majestic trains from most Southern cities.

ARGONAUT

Lounge car, pullmans, diner, buffet, soda fountain, smoking room, ladies' rest room, barber shop, and men's shower.

SCHEDULE

Leave

New Orleans	11:00 p.m.
Lake Charles	6:10 a.m.
Orange	7:12 a.m.
Beaumont	7:50 a.m.
Houston	10:20 a.m.
San Antonio	4:00 p.m.
Del Rio	8:25 p.m.
El Paso	9:40 a.m.

Arrive

Los Angeles	9:15 a.m.

SUNSET LIMITED

Buffet, Club Car, Observation Sleeper, Pullmans, Diner, Barber, Valet, Bath, Manicure, Hairdresser.

SCHEDULE

Leave

New Orleans	10:40 a.m.
Beaumont	6:28 p.m.
Houston	8:45 p.m.
San Antonio	2:30 a.m.
El Paso	6:45 p.m.

Arrive

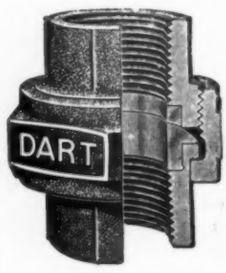
Los Angeles	5:00 p.m.

Southern Pacific — SOUTHERN PACIFIC LINES

J. T. Monroe,
Passenger Traffic Manager
J. F. Sullivan, *General Passenger Agent*
Houston, Texas

BRONZE TO BRONZE

Is the Reason



DART UNIONS

Give Service
Try them

E. M. Dart Mfg. Company

PROVIDENCE, R. I.

The Fairbanks Company
Distributors

NORTH LOUISIANA

Completions

Company, Well and Loocation	Initial Production Bbls.	Depth
BOSSIER PARISH—		
Sam Gold et al, McFarlin 1, 7-19-13	*	2600
CADDO PARISH—		
Texas Co., Henderson Land & Timber 1, 16-19-15	*	2761
WEBSTER PARISH—		
E. W. Bateman et al, Womble 1, 1-22-11	60	2712

BOSSIER PARISH—La. O. R. Corp.'s Matlock 1, 26-23-12, rig up. Natural Gas Prod. Co.'s U. S. 1, 31-23-11, wosr td 3194 ft. U. S. 2, 31-23-11, rig up. U. S. 3, 31-23-11, lcn. U. S. 4, 31-23-11, lcn. Bahan & Bahan et al's Pleasant 1, 25-23-12, dk. May 1, 26-23-12, rig up. Delaware La. Dev. Co.'s Bolinger 2, 31-23-11, set 4½-in cas 3130 ft, arr to dr plug td 3135 ft. Bolinger 3, 38-23-11, old well arr deepen. Greenwood Prod. Co.'s Bolinger 1, 36-23-12, rig up to deepen. Lide et al's Farrington 1, 23-23-12, dk. H. L. Hunt et al's Allen 1, 30-23-11, dk (formerly owned by Love et al). Woodley et al's Roberson 1, 22-23-12, rig up. L. & A. 2, 14-23-12, old well rig up to deepen, td 3081 ft. C. L. West et al's Sentell-Dickson 1, 3-20-13, sd 1110 ft. Lanier et al's Le Rosen 1, 26-21-14, dk pattern. Nell & Lanier's Biedenharn 1, 23-21-14, wosr, td 998 ft. Walker et al's Antrim 1, 28-21-13, sd 3184 ft. Jacob Laskin, Tr.'s Pardee 2, 3-22-11, wosr, 2655 ft. Morgan et al's Weatherbee 2, 28-19-11, dr lime 3143 ft. H. S. Autrey's Smith 1, 26-19-11, old well dr by H. I. Morgan et al to 1836 ft plugged back to 1501 ft. Sam Gold et al's McFarlin 1, 7-19-13, sw, abn, td 2600 ft. Muslow Oil Co.'s Barnett 1, 25-23-11, old well arr to deepen, td 3076 ft. Marks Meyer 1, 36-23-11, old well arr to deepen, td 3088 ft. Kilgore C-1, 31-23-11, set 4½-in cas 3150 ft, td 3167 ft. Kilgore B-1, 31-33-11, set 4½-in cas 3132 ft, blew in making 52 bbls hour first two hours, flowing 589 bbls day, td 3147 ft. Peyton 2, 30-23-11, rig up. Goodman-Johnson's Martin 1, 30-23-11, wosr, td 3169 ft. Northwest La. Nat. Gas Co.'s Bolinger 5, 38-23-11, rigging up wo. Magnolia Pet. Co.'s Rogers A-1, 21-23-12, set 5¾-in cas 3178 ft, dr 3354 ft. La. Pet. Co.'s Peyton 2, 25-23-12, dr 2800 ft. Peyton 3, 25-23-12, set 6⅝-in cas 3113 ft, flowing 50 bbls hour, td 3117 ft. Palmer Corp.'s Robinson 1, 26-23-12, set 4½-in cas 3155 ft, 2000 ft fluid in hole, wosr td 3175 ft. Texas Co.'s J. W. Pewton 2, 25-23-12, dk. J. W. Peyton 3, 30-23-11, set 6⅝-in cas 3136 ft, 10 ft sand. Wilkinson 1, 36-23-12, old well being deepened. Lee Kennebrew et al's Garrett 1, 36-23-12, lcn.

CADDO PARISH — Triangle Drilling Co.'s Hardy 1, 18-19-16, rig up. C. W. Robinson's Wilson 1, 2-15-16, rig up. Texas Co.'s Henderson Land & Timber 1, 16-19-15, dry abn td 2761 ft. Sam Gold et al's Hunter 3, 17-19-14, wosr, td 2457 ft. I. N. Pharris, Tr.'s Oden 1, 19-19-14, set 6⅝-in cas 2379 ft, td 2409 ft. Standard Oil Co. of La.'s Hunter 3, 17-19-14, set 6-in cas 2360 ft. Old River Oil Corp.'s Sibley 1, 15-19-14, wosr td 2495 ft. Dixie Oil Co.'s Dickson 1, 10-19-14, dk. R. W. Norton's Hill 1, 33-23-16, sd, wo 4496 ft.

CLAIBORNE PARISH — El Dorado Chief Oil Co.'s Simmons 1, 27-20-7w, sd in shell and boulders 2240 ft. Triangle Drilling Co.'s Killpatrick 1, 7-19-5w, set 9-in cas 4266 ft, tested one mil ft gas 4371 ft in granular lime coring showing two mil ft gas 4406 ft.

CONCORDIA PARISH—Joe Marr et al's Maxwell 1, 35-3-8e, dr 350 ft.

DE SOTO PARISH—Benson O. & G. Co.'s Harris 1, 6-10-13, set 6⅝-in cas 3070 ft, coring 3582 ft. R. O. Roy's Farmer E-1, 5-13-13, dr 2350 ft. Farmer B-1, 8-13-13, dk. Benedum & Trees' Johnson 1, 7-11-13, base chalk 1835 ft, coring 2760 ft.

FRANKLIN PARISH — Evansville Inv. Co.'s Welsh 1, 2-14-8e, dr 2300 ft. Franklin O. & G. Co.'s O'Brien 1, 7-15-9e, dr 630 ft. Davis et al's Moore 1, 12-11-6e, sd 1430 ft.

MOREHOUSE PARISH — P. J. White's Chess Wymond 1, 32-19-6e, sd 3025 ft.

NATCHITOCHES PARISH—S. D. McDaniels' Clark-Morse 1, 23-5-6w, sd 2436 ft. Robeline O. & G. Co.'s Winn 1, 7-8-9w, sd 1600 ft. Nichols & Wilder's Clark 1, 10-10-8w, dr chalk 2190 ft.

OUACHITA PARISH—J. L. Bullock, Tr.'s West Va. 1, 25-18-5e, sd 2700 ft.

Meet the Managers

R. W. (Bill) Harr, manager of the Big Spring store which serves New Mexico and West Texas.

V. A. Williams, in charge of our store at Borger, looks after the wants of oil men in the Panhandle.

M. McGarry, who serves the Gulf Coast and Southern Louisiana from the main office at Houston.

"Glad to know you . . . the pleasure is all ours."

Now that you know us it won't take but a minute to tell you what we represent and why we are so anxious to make your acquaintance.

Of course, you know the Robert J. Miller Co., are exclusive distributors of Fluid Packed Pumps in Texas, New Mexico and Southern Louisiana, and as such have an obligation of service to fulfill to the operators in these districts.

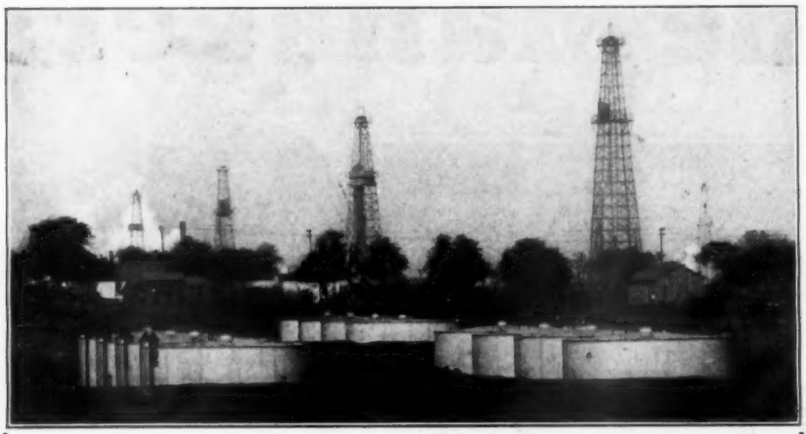
Realizing that it was impossible to satisfactorily serve so large a territory from the main store at Houston, branches have been opened at both Big Spring and Borger. This gives you an added convenience because any field in our territory can be reached overnight thus enabling us to give you one day service on new equipment or parts.

Another feature of the Robert J. Miller Co., service is the personal attention these men give you. Mr. Miller, president, is in charge of the Houston store; Mr. Bill Harr is manager of the Big Spring store and Mr. V. A. Williams is manager of the Borger store. We feel certain that your dealings with any of these men will be entirely satisfactory and they will do all within their power to maintain agreeable relationships so that it will always be a pleasure for you to call on them whenever in need of Fluid Packed Pump service.

ROBERT J. MILLER CO.

EXCLUSIVE DISTRIBUTORS for FLUID PACKED PUMPS in TEXAS NEW MEXICO SO. LOUISIANA

Three Stores in Texas — Houston · Borger · Big Spring



Use correct tankage—our *Vapor-Pressure* Stock and Flow Tanks—and sell ALL the oil you produce

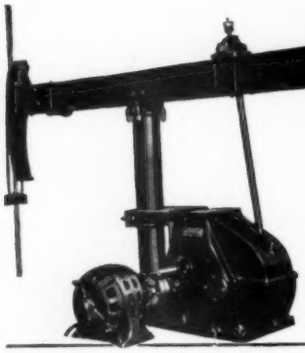
"Alone in Quality"

MALONEY TANK MFG. COMPANY
Tulsa, Oklahoma

Distributers at All Principal Petroleum Points

Sizes: 12 to 10,000 Barrels. Packed in Steel-Bound Crates for Export.

MALONEY



AMERICAN
AURORA, ILL.

Ask for catalog on American Pumping Units, showing sizes for various depths and capacities of wells.

C. S. Carter.
Sales Representative
Mid-Continent Bldg.,
Tulsa, Oklahoma

Wm. Pierce,
Sales Representative
701 Elm St.,
Dallas, Texas

THE AMERICAN WELL WORKS
General Offices AURORA, ILLINOIS and Factory

ACME DRILLING & FISHING TOOLS
SEAL OF QUALITY

KING *of the* **Drilling Clamps Wire Line**

On sale at all Acme Stores

Manufactured by

ACME FISHING TOOL Co.

Parkersburg, W.Va.

ESTABLISHED 1900

RAPIDES PARISH—Ayers Bros.' Wicklipp 1, 9-5n-2w, sd 2650 ft.

RED RIVER PARISH — W. D. Ball's Krumbholz 1, 32-14-10, sd high water 1560 ft.

RICHLAND PARISH—Richland O. & G. Co.'s Singletary 1, 20-18-7e, set 9-in cas 970 ft. Austin & McDonald's Millsaps 2, 17-17-6e, sd 2697 ft. Millsaps 3, 16-17-6e, sd 2477 ft. Millsaps 4, 16-17-6e, lcn. Millsaps 5, 8-17-6e, dk. Hunt 1, 13-17-5e, dk. Industrial Gas Co.'s Hodge 1, 7-16-7e, fsh ds 2874 ft. A. T. Davidson 1, 6-16-7e, sd wo 2762 ft. Ruston Drilling Co.'s Hodge 1, 7-16-7e, sd wo 2600 ft. S. R. Humble's Binion-Sartor 1, 20-17-6e, heading well td 2481 ft. Palmer Corp.'s Miles 2, 12-17-6e, set 6-in cas 2316 ft. W. C. Feazel's Landrum 1, 6-16-7e, dk. Shreveport Contractors' Buie 1, 17-15-7e, sd in black shale 2527 ft. International Gas. Prod. Co.'s LaGrone 1, 7-16-7e, lcn.

SABINE PARISH—Sabine O. & G. Co.'s Anderson 1, 19-8-12, dr 2565 ft. Benedum & Trees' Bowman-Hicks A-2, 3-7-12, set 8¼-in cas 2390 ft, td 2399 ft. Bowman-Hicks 3, 34-8-12, rig up. Bowman-Hicks 4, 34-8-12, dk. Bowman-Hicks 5, 34-8-12, dk pattern. R. L. Gay, Tr.'s Bowman-Hicks 6, 14-7-14, hfo, bailing 2513 ft. Sabine Lbr. Co. 3, 13-7-14, 200 ft oil in hole, wo td 2255 ft. A. H. Tarver et al's Long-Bell Lbr. Co. 2, 18-8-13, dr 2150 ft. State Bank 1, 27-8-12, topped chalk 2332 ft, arr set 8¼-in cas 2333 ft. Olsan Bros.' Hooker 1, 27-8-12, topped chalk 2357 ft, set 6⅝-in cas 2333 ft, 250 ft oil in hole, wosr td 2625 ft. Ohio Oil Co.'s Bowman-Hicks 1, 35-8-12, elev 307 ft, topped chalk 2392 ft, set 6⅝-in cas 2385 ft, pumping 45 bbls oil daily, td 2405 ft. Bowman-Hicks 2, 33-8-12, set 6⅝-in cas 2360 ft, topped chalk 2500 ft, flowing 296 bbls oil day choked in, awaiting storage, td 2510 ft. Bridges-Clark Oil Co.'s Gay 1, 3-9-12, tested sw through ds 2261 ft. La. O. R. Corp.'s Hughes 1, 36-8-12, set 6⅝-in cas 2406 ft, coring 2482 ft. Lion O. R. Co. and Lide et al's Sabine Lbr. Co. 1, 31-8-12, set 6-in cas 2182 ft, came in with ds in hole with estimated flow 3600 bbls day from marl, td 2197 ft, choked in tight as possible making 2000 bbls day with gate valve shut. Ruston Drilling Co.'s Holliday 1, 35-8-12, set 6⅝-in cas 2322 ft, dr 2437 ft. Bowman-Hicks 1, 4-7-12, dr 1540 ft. Bowman-Hicks A-1,35-8-12, dk. Bowman-Hicks A-2, 35-8-12, dk pattern. Warner Quinlan Co.'s Peterson 1, 26-8-13, set 6⅝-in cas 2170 ft, dr 2262 ft. Sabine Lbr. Co. 1, 34-8-12, set 8⅛-in cas 2326 ft, dr 2458 ft. Sabine Lbr. Co. 2, 34-8-12, lcn. Stovall Drilling Co.'s Lefkovitz 1, 33-8-12, dk. Le Grande et al's Halsey 1, 6-7-12, set 6⅝-in cas 2130 ft, cut 10-ft core mark strks sand 2148-58 ft. Giaque 1, 6-7-12, lcn. D. H. Reddick, Tr.'s Scretchfield 1, 18-9-12, sd 2300 ft. W. D. Ball's Long-Bell Lbr. Co. 1, 35-8-13, lcn. Haynes Bros.' Meyer 1, 28-8-12, topped chalk 2288 ft, set 6⅝-in cas 2288 ft, dr 2580 ft. Amerada Pet. Corp.'s Bowman-Hicks 1, 33-8-12, topped chalk 2340 ft, set 6⅝-in cas 2333 ft, swabbing 17 bbls oil daily, td 2456 ft. J. M. Bridges' McWilliams 1, 30-10-11, dr 1200 ft. Paramount O. & G. Co.'s Woolums 1, 11-6-12, dk. Zeke Lohman, Tr.'s Wyatt Lbr. Co. 1, 18-4-11, lcn.

TENSAS PARISH—Willis et al's Curry 1, 39-11-12e, set 10-in cas 80 ft, sd 650 ft.

UNION PARISH—Fred Stovall's Stovall 1, 32-23-4e, moving rig acct high water.

WEBSTER PARISH—F. M. Fuller's Monzingo 1, 27-18-8e, sd 600 ft. Pat Hudson's Gardner 1, 1-22-11, dk. B. L. Slack 1, 36-23-11, rig up. E. W. Bateman et al's Womble 1, 1-22-11, pumping 60 bbls oil 150 bbls sw, td 2712 ft. Womble 2, 1-22-11, set 6-in cas 2701 ft, 1500 ft oil in hole, 4 ft sand, td 2715 ft. Magnolia Pet. Co.'s Denman 2, 1-22-11, dr shale and shells 2716 ft. Baker 1, 35-23-11, dr shale 3365 ft. Phillips Pet. Co.'s Bolinger 4, 30-23-11, set 6⅝-in cas 3117 ft, 5 ft sand, td 3124 ft. Sarepta Oil Co.'s Gardner 1, 1-22-11, 600 ft fuel in hole, td 2719 ft. Paul C. Warren's Martin 1, 20-20-9, sd 1934 ft. Merritt & Merritt's Boucher 1, 17-23-11, rig up. Donohone Oil Co.'s Roseberry 1, 19-23-9, sd 104 ft.

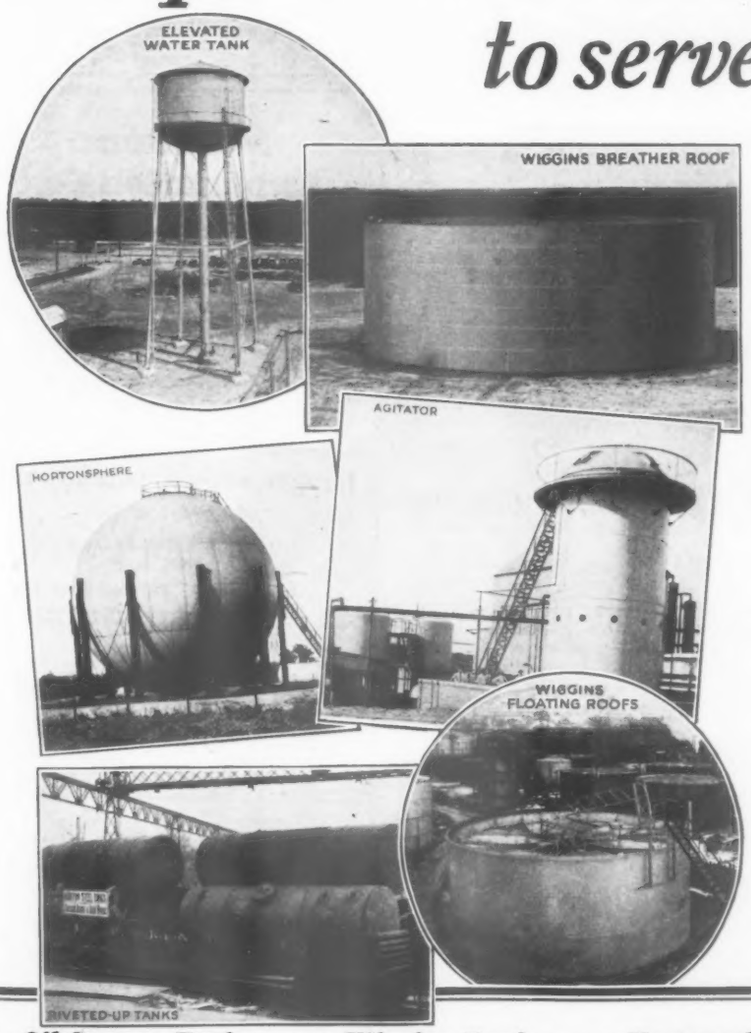
WEST CARROLL PARISH—Palmer Corp.'s Marston 1, 11-19-10e, set 6-in cas 2390 ft. H. L. Hunt's Brown 1, 4-21-11e, rig up.

MISSISSIPPI

ALCORN COUNTY — Alcorn Pet. Co.'s Matthews 1, 14-2-7, preparatory shooting formation 2520-60 ft, 6-inch cas re-set 2393 ft, td 2735 ft.

CHICKASAW COUNTY — Hightower &

And now ~ a plant in Birmingham *to serve the South*



WE have purchased The Reeves Brothers Company plant in Birmingham, Alabama, and are operating it in conjunction with our other plants in Chicago, Greenville, Pa., and Bridgeburg, Ont.

This new plant enables us to serve the South from a convenient central location. It is equipped to handle a wide range of steel plate work. In addition to our regular products such as *Storage Tanks, Wiggins Roofs, Elevated tanks, Hortonspheres, etc.* we are now in a position to fabricate at Birmingham such special structures for the oil industry as *Bubble Towers, Agitators, Condenser boxes, Stills, Absorbers, Tank cars* and *Cylindrical Tanks.*

We will appreciate the opportunity of quoting you on any of these products, erected complete with our own experienced crews.

CHICAGO BRIDGE & IRON WORKS

Dallas	3338 Magnolia Bldg.
Birmingham	1538 Fiftieth St., North
Chicago	2142 Old Colony Bldg.
New York	3144 Hudson Terminal Bldg.
Cleveland	2241 Union Trust Bldg.
San Francisco	1050 Rialto Bldg.
Atlanta	1055 Healey Bldg.
Detroit	1515 Lafayette Bldg.
Philadelphia	1613 Jefferson Bldg.
Boston	1518 Consol. Gas Bldg.

Oil Storage Tanks • • • Wiggins Roofs • • • Hortonspheres • • • Rundown Tanks • • •
Cylindrical Tanks • • • Elevated Tanks • • • Standpipes • • • Pressure Tanks • • •
Agitators • • • Absorbers • • • Bubble Towers • • • Condenser Boxes • • • Crude Stills
• • • Refinery Equipment • • • Tank Cars • • • Smokestacks • • • Gas Holders • • •

Ground BARYTES

4.3+ Specific Gravity

from our own mines

AMERICAN DEVELOPMENT COMPANY
309-13 FINANCIAL CENTER BUILDING
SAN FRANCISCO, CALIFORNIA

Coastal Oil Finding Company

Contracts taken for Torsion Balance Work

Esperson Bldg., Houston, Texas
Phone Fairfax 4383

CHRISTIAN IDEN
U. S. Representative
Toepfer & Company
(Germany)

Geophysical Instruments

Magnetometers, Torsion Balances, Etc.
718 Esperson Building
HOUSTON, TEXAS

Agents Wanted for
Oklahoma and California

"Photographs of Oil Fields and Machinery Must Be Right"
Calvin Wheat's Photographs Are Right!
CALVIN WHEAT STUDIOS
415 Louisiana St. Preston 2526
Houston, Texas

MAJESTIC HOTEL
LAKE CHARLES, LA.
Your home while in Southwest Louisiana
Headquarters for Oil Co. Representatives

Golsan's Fleming 1, 20-13-3w, driving 8¾-in thru quicksand, td 1280 ft; Fleming 2, 15-13-2e, dk pat.

CLAIBORNE COUNTY—Ben White's Old Hen 1, 26-10-4, sd 2004 ft.

HARRISON COUNTY (Gulfport Dist.)—Dalton Oil Co.'s Lopez 1, 15-7-10w, ltn.

HINDS COUNTY (Jackson Dist.)—Mrs. Ella Rawls Reeder's State Land 1, 25-6-1w, co td 2905 ft. Jackson O&G Co.'s Mayes 1, 2-5-1e, set 10-inch cas 730 ft, set 6⅝-inch cas top chalk 2460 ft, arr drill in.

LAFAYETTE COUNTY — F. E. West et al's May 1, 22-10-1w, rigged up wo.

LAUDERDALE COUNTY (Meridian Dist.)—Lauderdale O&G Co.'s Lackey 1, 2-7-16, set 8¼-inch cas 2790 ft arr drill plug, td 2816 ft. Meridian Nat. Gas Co.'s Mattie Houser 1, 33-8-18, sd wo in sand, td 2693 ft. Boyd Hammond's Craig 1, 2-6-14, dk.

LINCOLN COUNTY (Brookhaven Dist.)—Lincoln O&G Co.'s Pat Case 1, 21-8-6, sd 2221 ft.

LEE COUNTY — Lee County Pet. Co.'s Hickman 1, 12-8-6, sd 920 ft.

MONROE COUNTY (Amory Dist.)—Amory Pet. Co.'s Hall 1, 8-13-17, set 8-inch cas 2293 ft, reset liner to stop caving 2340 ft, dr 2370 ft, td old hole 3045 ft. Amory Dev. Co.'s Bourland 1, 2-13-19, sd in lime bailer in hole td 2912 ft. Park Bowser's Cowart 2, 2-12-19, sd 30 ft.

RANKIN COUNTY (Jackson Dist.)—Gulf Ref. Co.'s Rainey 1, 13-5n-1e, rigged up ready to sp.

WARREN COUNTY (Vicksburg Dist.)—Henderson et al's Dornbusch 1, 8-18-15, sd wo with ds stuck, td 2475 ft.

WEBSTER COUNTY — Cumberland Oil Co.'s Henley 1, 15-21-11, re-taking leases preparatory resume dr, td 1865 ft.

YALABOUSHA COUNTY (Water Valley Dist.)—J. D. Collette et al's Blackmer 1, 14-11-4w, topped red beds 2316 ft, fsh ds, td 2433 ft.

YAZOO COUNTY — Amerada Pet. Corp.'s Campbell 1, 24-21-2, topped Cretaceous chalk 3600 ft, sr in sandy shale, td 3738 ft.

ALABAMA

HOUSTON COUNTY—J. R. Sealey's Fee 1, 13-1n-27e, changing from cable tools to rotary, td 3100 ft.

LAMAR COUNTY—Briggs & Knapp's Wefel 1, 25-12-14, set 4⅞-inch cas 1658 ft, dr hard limestone 1740 ft.

LAUDERDALE COUNTY — P. J. McAlpine's O'Neal Hrs. 1, 8-2s-13w, rigged up ready to sp.

MARION COUNTY — P. J. McAlpine's Clark 1, 22-11-14, dk pat.

MORGAN COUNTY — Albany-Decatur O. & G. Co.'s English 1, 6-6-4, fsh for cas, td 4130 ft.

SUMTER COUNTY—B. W. Bates' Fee 1, 3-18-1w, arr abn, td 1200 ft; Fee 2, 3-18-1w, rig up.

WASHINGTON COUNTY—Hobson et al's Wilson 1, 27-7-1w, fsh for bailer in limey shale, td 881 ft; Hobson Bros. 1, 9-8-2w, sd 1450 ft. Oscar Brown's U. S. Land & Cotton 1, 26-3-2, arr ab nat 150 ft and skid over for new hole.

TENNESSEE

DECATUR COUNTY—Chester County O. & G. Co.'s Montgomery 1, set 6-inch cas 1045 ft, dr 1636 ft.

NATIONAL PETROLEUM ENGINEERING COMPANY
Engineers & Geologists
TULSA, OKLAHOMA

APPRAISALS
REPORTS-COMMERCIAL & TAX

SURVEYS
ESTIMATES OF OIL RESERVES

AN EXPERIENCED OIL FIELD ORGANIZATION

C. W. WEBSTER

West Texas Oil and Gas Leases
⅞ Mineral Deeds

ROYALTIES

18 Years in Texas

Reference: Mercantile Agencies and National Banks

Petroleum Building
FORT WORTH, TEXAS

HEYDRICK'S NEW MAPS

WEST TEXAS

County Maps

Combination Maps

Descriptions and prices on application

HEYDRICK MAPPING COMPANY
Wichita Falls, Texas

McCollum Exploration Co.

Contracts taken for Seismograph Work

UNITED STATES
5522 Connecticut Ave.,
WASHINGTON, D. C.

FOREIGN COUNTRIES
1211 Esperson Bldg.,
HOUSTON, TEXAS

HIRSCH, BROWN AND SUSMAN
Attorneys at Law
32nd Floor Gulf Building
Houston, Texas
Specializing in Oil Law and Land Law

PATENTS
Patents Obtained and Trade Marks and Copyrights Registered
HARDWAY & CATHEY
428-29-30 Bankers Mortgage Bldg.
Phone Fairfax 8232 Houston, Texas

PATENTS
Patents Obtained, Trade Marks, Patent Causes
JESSE R. STONE
Formerly Assistant Examiner
United States Patent Office
Andrews, Streetman, Logue & Mobley
12th Floor Union N. Bk., Houston, Texas

THE FT. WORTH LABORATORIES

Field Gas Testing. Analysis of oil field brines, gas minerals and oil. Sell Thermometers, Hydrometers and Laboratory Glassware.
F. B. Porter, B. S., Ch. E., Pres.
R. H. Fash, B. S., Vice-President
828½ Monroe St, Ft. Worth, Tex.

OXWELDING REDUCES UP-KEEP COSTS

THE economies of Oxwelded construction continue throughout the life of the pipe line. There is no leakage in an oxwelded line and there is no maintenance expense, for the joints will last as long as the pipe.

The Best of Everything for OXWELDING AND CUTTING

LINDE OXYGEN
The Linde Air Products Co.

Oxweld
Apparatus and Supplies
Oxweld Acetylene Co.

Prest-O-Lite
Dissolved Acetylene
The Prest-O-Lite Co., Inc.

UNION CARBIDE
Union Carbide Sales Co.

Units of
UNION CARBIDE AND CARBON CORPORATION

General Offices
30 East 42nd St., New York, N. Y.

UCC

Sales Offices
In principal cities of the country

64 Linde Plants—45 Prest-O-Lite Plants—154 Oxygen Warehouse Stocks—138 Acetylene Warehouse Stocks—38 Apparatus Warehouse Stocks—235 Carbide Warehouse Stocks

THE HAPPY BELTS

The Most Popular Belt in the Mid-Continent Field

HAPPY INNERSTITCHED
Friction Surface
RUBBER BELT

A distinct Oil Field structure built especially for heavy duty slow speed drives.

First Quality Leather Belts

Expert leather belt service at all our stores. Large stocks of all type belts are carried at Tulsa, Seminole and El Dorado, Ark.

CALL ON OUR ENGINEER FOR EXPERT ADVICE ON BELTING AND BELTING APPLICATION

HAPPY BELTING COMPANY
TULSA, OKLAHOMA . . . BRANCHES { EL DORADO, ARKANSAS / SEMINOLE, OKLAHOMA

NEW EQUIPMENT, CATALOGS, BULLETINS, BOOKS

New Rock Core Bit

H. C. SMITH MANUFACTURING COMPANY

The latest addition to the line of drilling, underreaming and coring tools made by H. C. Smith Manufacturing Company, Los Nietos, California, is the Type "F" Rock Core Bit, shown here, that cores the hardest formations, including schist quartz and chert, as the H. C. Smith softer formation cutter heads core the softer formations; operates on a new principle.

Type F Core Bit

A prominent feature of this new bit is that it has more cutting surface, and the larger cutters result in a better rolling action and are less apt to stop rolling. The rollers may be quickly changed, since a new type of eccentric lock pin is employed in the head to retain them.

The Type "F" cutter head also has side reamers, placed near the bottom of the bit, to steady the bit in the hole as well as to insure full gauge hole.

Another important feature is the direct, straight line flow of circulation that washes directly on and between the cutters.

The core catcher in the Type "F" bit also is an improved design, and is placed at minimum distance from the mouth of the bit. It is a combination of spring and slip, which attains a double grip on the core recovered.

The new Type "F" core bit is interchangeable with all other types of H. C. Smith cutter heads, adaptable to all formations from the soft sand chalk and anhydrites to the hardest schist quartz and chert. It is forged of special alloy steel in sizes up to 12 inches, and in sizes 12 inches and larger it is cast of a special alloy cast steel. Complete information and interesting performance data on the new Type "F" rock core bit will be supplied upon request to the company.

Reduction Unit

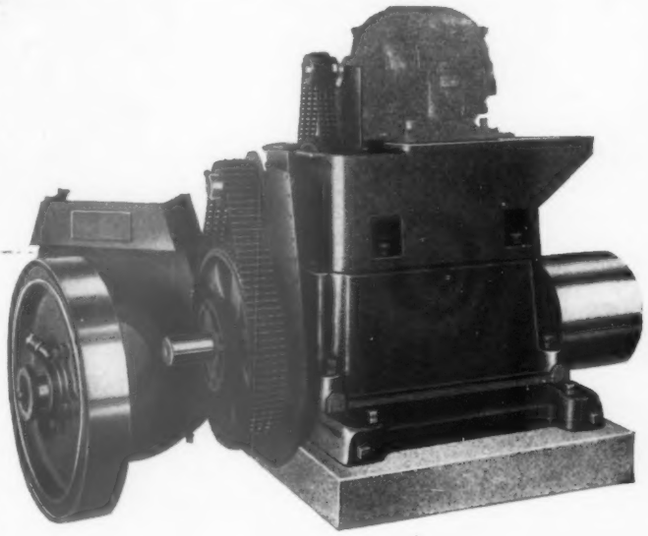
OIL COUNTRY SPECIALTIES MANUFACTURING COMPANY

Oil Country Specialties Manufacturing Company, Coffeyville, Kansas, has recently announced the new auxiliary diamond Timken reduction unit, which consists of a similar, but smaller single reduction unit. It is adaptable to the diamond Timken reduction unit now in use in electrically equipped oil fields.

The diamond Timken reduction unit was built adaptable to standard oil well motors of various makes. The auxiliary diamond Timken unit is adapted to replace the oil well motor on the diamond Timken unit and is designed to accommodate constant speed motors of 900 to 1200 r.p.m. and up to 40 horsepower capacity. The outfit is equipped with Timken bearings and Diamond roller chain, and one splash system lubricates both bearings and chain.

It is adaptable to all Oil Country Specialties Company units now in the field so that higher speed constant speed motors may be used as wells become lighter and pulling operations less frequent so that other means of servicing the well may be conveniently used.

Detailed information is available on this product by writing the company at the address given above.



O. S. C. Reduction Unit

Kibele Piston

MISSION SALES COMPANY

The Kibele piston, manufactured and distributed by Mission Sales Company, 2416 Railroad Street, Houston, has been recently improved, with the addition of some interesting features.

A new rubber which embodies some advantageous changes, including a new rubber compound, offers the outstanding improvement offered over the original Kibele piston. The compounding in this rubber is added as a prevention against corrosion and to give the rubber added toughness and strength. The rubber is designed to withstand 3000 pounds pressure without the head or follow plate.

The head and follow plate on the improved piston have been made smaller in diameter so that they do not come in contact with the liner, thus avoiding wear and tear on either the liner or the plate. The weight has been cut down on all

Kibele Piston

pistons of seven-inch or above to do away with kinking on the new larger pumps of longer stroke. The reduced weight is also featured for its result of less wear and less friction on the bottom of the piston.

The new design is also to prevent the expanding of the rubber in the center, but rather on the lips to give about a quarter-inch more wearing surface.

BLACKOR BULLETIN

The uses of hard facing to prevent rapid abrasion on drilling tools are fully covered in a 14-page catalog recently published by the Blackor Company, manufacturers of hard facing at Los Angeles. This catalog is illustrated and contains much information for operators with abrasion problems.

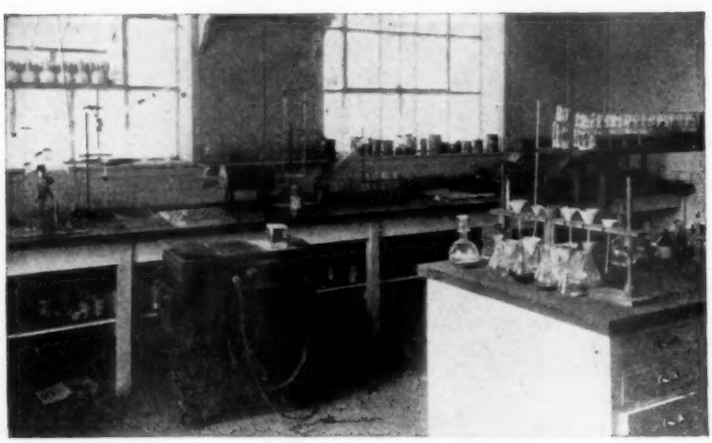
The Blackor Company has also published a booklet which describes and illustrates the proper methods to use in applying Blackor to drilling tools.

Copies of either one or both of these books can be obtained by writing the Blackor Company, 13007 South Main Street, Los Angeles.

Fred E. Cooper of Tulsa, special winch developer for the Advance-Rumely Thresher Company, announces that W. G. Constant is in charge of sales and service in Southwest Texas succeeding H. B. Martin. Mr. Cooper is in that section accompanying Mr. Constant on a tour of the territory.

The Dallas Belting Company of Dallas, Texas, has been appointed distributors in the Mid-Continent field for the products of the Chas. A. Schieren Company of New York, manufacturers of belting including Duxbak waterproof and Royal Extra waterproof leather belting for the oil industry. A complete stock of material will be carried by the Dallas Belting Company at 2615-17 Commerce Street of which Chas. T. Sowden is president and Webb M. Sowden secretary.

L. M. Deutsch for many years located at Fort Worth, Texas, with Byron-Jackson Pump Company, has been transferred to Shreveport, Louisiana, where he will be district representative covering Arkansas, Louisiana, and East Texas.



Above is shown an interior view of the H. C. Smith Manufacturing Company's research laboratory at Los Nietos, California, where chemists and engineers of the company do scientific research on materials and make tests on the completed drilling tools manufactured by this company.

Assembly of Oster-Williams Representatives

The combined sales force of Oster Manufacturing Company and Williams Tool Corporation is shown in the accompanying illustration, in meeting at Cleveland, Ohio, following the recent merger of the two companies. Thirty-eight men were present.

This sales meeting, under the direction of Arthur S. Gould, secretary of Oster Manufacturing Company and general sales manager of the newly created organization, covered five days. The first two days were spent in a factory inspection trip of the Williams Tool Corporation plant at Erie, Pennsylvania, where the disassembling and reassembling of the complete Williams line and demonstrations of the threading and cutting speed of the rapiduction machines. Three days were spent in Cleveland where similar laboratory demonstrations were made of the complete Oster line of hand tools and portable stationary power machines.

Among the field sales force present were: Robert Chelstrom, manager of the Boston office; Harold Thompson and Dave Moreinis of the New York office; Roy Accord, Buffalo; John Lynn and Harry Van Osten of the Chicago office; George Lewis, Minneapolis; Pete Willis, Los Angeles; Gayle Jones, Atlanta; Jim Wells, Kansas City; Hiram Gardner, Texas; Ralph Oster and Ed Mosher of the Cleveland office, Howard Oster from Philadelphia and Harry Liehr, manager of the oil field division.

Baash-Ross Tool Company's new field shop at 1559 G Street, Capitol Hill, Oklahoma City, was opened February 15, carrying a full line of Baash-Ross tools for rental and sale and equipped for day and night service in pipe slotting, perforating, inside and outside threading, and all types of repairs and machine work. This store is in charge of A. V. Cox, George Dudney and H. C. Jones, with a full staff of field mechanics.

American Manufacturing Company of Fort Worth and Weatherford, Texas, has opened a branch warehouse in Oklahoma City to serve the increasing development in that area. This warehouse is located at 121 East Washington Avenue. American Manufacturing Company manufactures special oil field equipment including pumping jacks, swaged nipples, bull plugs and other specialties.

R. T. Todd, who was formerly district representative for Byron-Jackson Pump Company, in Kansas and Seminole, Oklahoma, areas, with Tulsa as his headquarters, has been permanently moved to Houston, with offices in the Post-Dispatch Building.

HAZARD

INTRODUCING FLEXSET

a Preformed Wire Rope of Dependable Hazard Quality

THE value of preforming as a means of increasing efficiency and lowering costs, by materially lengthening wire rope life, has been conclusively proven in rotary drilling and many other oil field applications.

Hazard adopted this preforming principle for certain ropes over a year ago. Thousands of Hazard preformed ropes were placed in service in the oil and other industries, and operated and tested under the severest conditions.

Compared with the best service obtained from other ropes on each operation, Hazard preformed rope gave an increase varying from 50 to 250%—but an increase, *always.*

This proven preformed rope—built to Hazard's rigid specifications—is now offered through Hazard's branches and distributors—making available for your immediate use a preformed rope of *Dependable Hazard Quality.*

Ask for it by the name—Flex-Set.

HAZARD WIRE ROPE COMPANY
WILKES-BARRE PENNSYLVANIA

1625 South Troost Avenue, TULSA, OKLA.

New York Pittsburgh Chicago Denver Los Angeles San Francisco Birmingham

DISTRIBUTORS

BOVARD SUPPLY CO.
904 Mid-Continent Bldg., Tulsa, Okla.
Borger, Texas; Beggs, Maud, Sapulpa, Seminole, Tulsa, Oklahoma; Independence, Wichita Heights, Winfield, Kansas.

CAMERON TOOL & SUPPLY CO.
Cameron, W. Va.

CROTTY & CO.
Parkersburg, W. Va.

DANSER SUPPLY CO.
Weston, W. Va.

FORT WORTH WELL MACHINERY & SUPPLY CO.
Fort Worth, Texas.

GREAT NORTHERN TOOL & SUPPLY CO.
Billings, Mont.
Cody, Kemmerer, Wyoming; Kevin, Montana

HOUSTON OIL FIELD MATERIAL CO., Inc.
Houston, Texas.

LONGHART SUPPLY CO.
619 Petroleum Bldg., Fort Worth, Texas
Big Springs, Graham, McCamey, McLean, Pampa, Pyote, Ranger, Rankin, Santa Rita, Texas.

MID-CONTINENT SUPPLY CO.
Fort Worth, Texas.

MOUNTAIN IRON & SUPPLY CO.
Parkersburg, W. Va.; El Dorado, Eureka, Madison, Valley Center, Wichita, Kansas.

PRICHARD SUPPLY CO.
Mannington, W. Va.

PRODUCERS SUPPLY & TOOL CO.
Marietta, Ohio; St. Mary's, W. Va.; Fort Worth, Olney, Graham, Coleman, Muenster, Texas. Bristow, Oklahoma.

UNITED OIL WELL & SUPPLY CO.
Los Angeles, Cal.

SQUEAKS FROM THE BULL WHEEL

The local newspaper which offered $1.00 for each Embarrassing Moments letter accepted by the editor, received the following:

Dear Editor: I entered my house last night and caught another man with my wife. I was indeed embarrassed. Please send $2.00 as my wife was also embarrassed."

The editor read the letter and sent the man $3.00, with this note:

"We don't wish to cheat you. We feel that the other man must have been somewhat embarrassed also."

Negro Caller at Hospital: "I came to see how mah fren' Joe Brown was gettin' along."

Nurse: "Why he's getting along fine; he's convalescing now."

Negro: "Well, I'll just sit down and wait till he's through."

Percival: "That was the most unkindest cut of all, as the poet says."

Penelope: "What was that?"

"I showed her one of my boyhood pictures with my father holding me on his knee, and she said, 'My, who is the ventriloquist?'"

Mother—What did your father say when he saw his broken pipe?

Innocent—Shall I leave out the swear words, mother?

Mother—Certainly, my dear.

Innocent—Then I don't think he said anything.

"Bridget, didn't I hear you quarreling with the milkman this morning?"

"Ye did not, ma'am. I inquoired for the health of a milkmaid at the dairy, who's ill."

"Yes, and—"

"Says I: 'How's the milkmaid?' An' he got in a tempest o' fury an' said: 'That's a thrade secret.'"

Tammany politician who retired after amassing a fortune decided to build himself a showplace for a home in Westchester, hightoned suburb of New York City.

"I want to give the place a name," he confided to an old newspaper friend; "you know, a name with one word that will describe me and the spirit of the place."

"Well, now that you've quit politics," suggested the scribe, "why not call the place Dunrobin?"

A New Yorker visited the Bad Lands last winter. He had a letter of introduction to a rich native. After he'd presented his letter he said to the native in a patronizing way:

"I guess you don't get many New Yorkers out here?"

"Naw," said the native, "rattlesnakes is our chief plague."

With all the dog stories and cat stories and fish stories that circulate, it is odd that there are no more horse stories.

A Methodist minister of Conoshocken tells a horse story with eclat.

He was riding his horse on the banks of the Schuylkill when one of its hind shoes dropped off. The horse halted, turned, and took up the shoe in its mouth. It clapped the shoe onto its foot again. The shoe stuck loosely there, thanks to the nails still dangling from it. Then the horse backed over to a stone wall and kicked against it half a dozen times. These kicks fastened the shoe on firmly enough. It held, in fact, till the Methodist minister got home.

Man (at police station)—Oh, in regard to the watch which I reported was stolen yesterday, I have since found that it is not lost at all.

"You are too late," replied the superintendent, "the thief has been arrested."

An El Dorado doctor stopped an automobile mechanic on the street to make a complaint.

"I paid you $10 a few days ago to eliminate the knocking in my machine," he said, "and now it's just as bad as ever."

"Well, doc," replied the mechanic, "I can say the same of my rheumatism which you treated. So we might call it square."

"A man came out of a store the other day and said: 'I'll never enter that hole again, so help me!'

"Then he went on to explain that he had gone into the store and bought a pound of sulphur. He asked how much it was, and the storekeeper said 20 cents, so the man camplained that there was another store in the next block where he could get it for 15 cents, and then the storekeeper looked him up and down and said in a meaningful tone: 'I can tell you where you can get it for nothing.'"

Waiter (politely)—I am sorry to annoy you, but I saw you place the silver spoon in your hand bag.

Accused (angrily)—My physician's orders.

Waiter (patiently)—Oh, if you mean you are being treated for kleptomania, I'll not report the matter if you simply return the spoon.

Accused (persistently)—My physician instructed me to take a large tablespoon after each meal.

Construction at the Money Point
Makes the
Appleman Bit a Money Saver

The many unique features incorporated in the Appleman Bit bring savings in money and time to the oil operator and minimize grief to a negligible item in drilling.

There is only one APPLEMAN GUMBO BIT and its specially designed features of construction give the only true APPLEMAN PERFORMANCE.

SELF-SHARPENING BLADES are attained by hard facing in the concave shaped blades permitting wear on the back to retain the cutting edges.

STRAIGHT WATER COURSES lead directly to the cutting edge insuring rapid mixing and breaking up of cuttings to be quickly washed away in solution.

SIDEWALL CUTTING is attained by the self-sharpening blades and their special design. This gives a clean and well-prepared sidewall "bored to size."

B.K. APPLEMAN
BEAUMONT, TEXAS

FOR LOTS OF HOT STUFF USE THE

AMERICAN "CHIEF" HEATER

SEND FOR NEW CATALOG.

Our catalogue shows full American Line of Heaters, Oil Burners, Torches, Pouring Pots, Pipe Cleaners and Brushes.

AMERICAN STEEL WORKS

1211 W 27TH ST., KANSAS CITY, MISSOURI

ROOSEVELT HOTEL

PENN AVENUE AT SIXTH STREET

600 ROOMS

IN THE CENTRE OF THE TRIANGLE

OVER 300 ROOMS AT $3 A DAY AND LESS

All with Shower or Tub

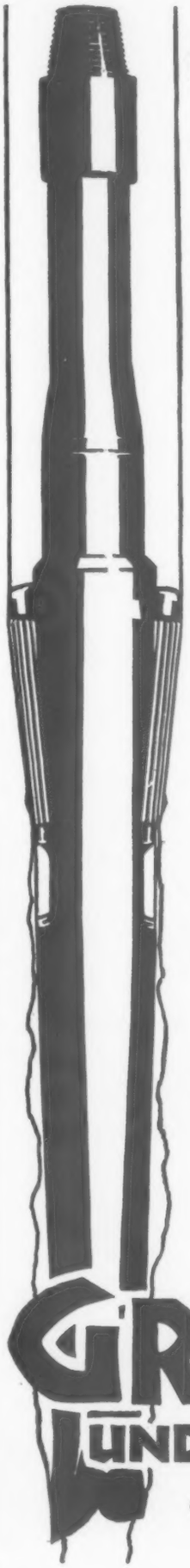
DOUBLE ~ $1.00 A DAY EXTRA

GARAGE IN CONNECTION

Famous for Food ~ At Reasonable Prices

L. FRED KLOOZ, *Pres.*

PITTSBURGH



UNDERREAM TO GET ALL THE OIL

UNDERREAMING may mean the difference between the large producer and the small producer.

In wells or in territory where there is no large gas pressure, the circulation mud becomes impregnated in the wall of the hole and thus presents an obstruction to the entrance of oil.

By UNDERREAMING through the oil sands and either using oil for circulation—or light mud—the obstruction is eliminated and the operator is certain of getting all the oil there is.

As positive proof of the value of UNDERREAMING to help get all the oil, there have been instances where wells underreamed with the Grant Rotary Expansion Underreamer have produced 3 times as much oil as adjoining wells not underreamed.

Grant Oil Tool Co.

2042-44 East Vernon Avenue
LOS ANGELES, CALIFORNIA
U. S. A.

DISTRIBUTORS

OIL WELL SUPPLY COMPANY
THE NATIONAL SUPPLY COMPANIES
CONTINENTAL SUPPLY COMPANY
THE REPUBLIC SUPPLY CO. OF CALIF.
LUCEY PRODUCTS CORPORATION

GRANT UNDERREAMERS

"Used where performance counts"

INDEX TO ADVERTISERS

Acme Fishing Tool Company.....112
Ajax Iron Works.....
Alco Oil Tool Company.....
Allis Chalmers Manufacturing Co....
Allsteel Products Company.....
Alten's Foundry & Machine Works...
Aluminum Company of America.....
American Cable Company.....109
American Development Company.....114
American Iron & Machine Works....
American Hammered Piston Ring Co..
American Meter Company.....
American Roller Bearing Company....
American Steel Works.....121
American Steel & Wire Company.....
American Telegraph & Telephone Co..
American Well Works.....112
Andrews Steel Company.....
B. K. Appleman.....120
Ash Grove Lime & Portland Cement Company .....
Athey Truss Wheel Company..... 72
Axelson Machine Company..Second Cover

Baash-Ross Tool Company.....
Baker Oil Tools, Incorporated.....
William S. Barnickel & Company....
Bartlett-Hayward Company .....
Beaumont Iron Works .....
Beebe Brothers .....
Bessemer Gas Engine Company.....
Bethlehem Steel Company.....
Black, Sivalls & Bryson..... 85
Blackor Company .....
Braden Steel & Winch Company.....
Braden Steel Corporation.....
The Brewster Company.....
Bridgeport Machine Company.....
Bristol Hotel 108
Broderick Bascom Rope Company....
Buckeye Traction Ditcher Company...
Buffalo Bolt Company.....
Burns Tool Company..... 92
Butler Manufacturing Company.....
Byron Jackson Company..... 8

Cameron Iron Works.....
Caterpillar Tractor Company.....109
Central Alloy Steel Corporation 103
Chicago Bridge & Iron Works.....113
Chicago Pneumatic Tool Company....
Clark Brothers Company..... 81
Coastal Oil Finding Company.....114
Colona Manufacturing Company.....
Columbia Nut & Bolt Company.....
Columbian Steel Tank Company..... 9
Continental Motors Corporation.....
Continental Supply Company..... 11
Fred E. Cooper..... 93
Cooper-Bessemer Corporation .....
Cyclone Fence Company.....104

Darling Valve & Manufacturing Co. .. 10
F. M. Dart Manufacturing Company..110
Doheny-Stone Drill Company.....
Donovan Boiler Works.....
Drane-Humphreys Company .....
Dresser & Gordon, Inc. .....
S. R. Dresser Manufacturing Co. ....
Driftmeter, Incorporated .....
The Drillometer Company.....

Eason-Therolf Tool Company.....
Eastern Car & Construction Company.
Economy Pump Company .....
Economy Pump & Oil Tool Company..
T. H. Edelblute Company.....104
E. H. Edward Manufacturing Co.....
Electric Controller Manufacturing Co..
Elliott Core Drilling Company.....
Emsco Derrick & Equipment Co. 7

Fenwick-Reddaway Manufacturing Co.
First National Bank, Houston.....
Fluid Packed Pump Company.....
Fort Worth Laboratories.....114
Franklin Valveless Engine Company... 63
Frick-Reid Supply Corporation.....

Gaso Pump & Burner Manufacturing Company 3
Gates Rubber Company.....
Gerbruder Haff .....
General Electric Company.....
General Paint Corporation.....
Fred I. Getty 18
H. P. Gott Manufacturing Company..108
Grant Oil Tool Company.....121
Grasselli Chemical Corporation.....
Gray Tool Company.....
Greene, Tweed & Company.....
Guiberson Corporation 36
Gulf Refining Company..... 99
Gulf States Utilities Company.....

Erle P. Halliburton Co. 95
Hanlon-Waters, Inc. .....
Happy Belting Company.....116
Hardway & Cathey.....114
Haynes Stellite Company.....
Harrisburg Pipe & Pipe Benuding Company . .....
Hazard Wire Rope Company.....119
C. M. Hetter Sons & Company.....
Hercules Motors Corporation.....
Hercules Supply Company.....
Hercules Tool Company.....
Heydrick Mapping Company.....114
Hill, Hubbell & Company.....
Hinderliter Tool Company.....
Hirsch, Brown & Susman.....114
George O. Hollow Company.....
Charles N. Hough Manufacturing Co..
Howard Smith Company.....
Houston Engineers .....
Houston National Bank.....
Hughes Tool Company.....Fourth Cover
Humble Oil & Refining Company.....
Hyatt Roller Bearing Company.....

Christian Iden 114
Imperial Royalties Company.....
Ingersoll-Rand Company .....
International Derrick & Equipment Company 4-5
International Harvester Company..... 48
International Mineral & Metals Co....
International Storage & Warehouse Company . .....
International Supply Company.....

Byron Jackson Company..... 8
Jarecki Manufacturing Company.....
Jensen Brothers Manufacturing Co.....
S. M. Jones Company.....
Jones & Laughlin Steel Corporation...
Johnson Formation Testing Corporation

Kerotest Manufacturing Company.....
Kirk-Morrow Iron Works Company... 83
Kontol Company .....

Landis Machine Company.....
Larkin Company .....
Layne & Bowler Company 77
Le Bus Rotary Tool Works.....
Lincoln Electric Company.....
Linde Air Products Company..... 12
Link Belt Company.....
Lucey Products Corporation.....
Ludlow Valve Manufacturing Co..... 74
Lufkin Foundry & Machine Company 47

Maintenance Engineering Corporation. 72
McCollum Exploration Company.....114
J. H. McEvoy & Company.....
Majestic Hotel 114
Maloney Tank Manufacturing Co.....112
Martin-Decker Corporation 16
Martin Wagon Company.....106
Metric Metal Works.....
Mills Alloys, Inc. 17
Miller Combination Bailer & Pump Co. 68
Mine Safety Appliance Company.....
Robert J. Miller Company.....111
Lee C. Moore & Company.....Insert
J. P. Morris & DeLaVergne, Inc. ... 91
Murray Tool & Supply Company.....

National Petroleum Engineering Corp..114
National Supply Companies..... 97
National Tank Company.....
National Tools & Metals, Inc. .....
National Transit Pump & Machine Co.
National Tube Company.....
Naylor Pipe Company.....
New Jersey Asbestos Company.....
Norvell-Wilder Supply Company.....

O. C. S. Manufacturing Company.....101
Oakite Products, Inc. .....
O'Brien Steel Construction Company..
Oil City Map Company.....
Oil Equipment & Engineering Exposition .....
Oil Well Supply Company..... 20
Oil Well Improvement Company.....
Oklahoma Portland Cement Company.
Oxweld Acetylene Company.....

Page Steel & Wire Company.....
Parkersburg Machine Company.....
Parkersburg Rig & Reel Company.... 89
Patterson-Ballagh Corporation Front Cover
Peden Company .....
Petroleum Engineering University....
Petroleum Rectifying Company.....
Petroleum Equipment Company.....
Petroleum Products Company.....
Pittsburgh-Des Moines Steel Co. 74
Pittsburgh Equitable Meter Co. .....
Pittsburgh Screw & Bolt Corporation..
Pittsburgh Steel Products Company... 14
Pittsburgh Valve, Foundry & Construction Company .....
Pratt & Whitney Company.....

Quasi-Arc, Inc. .....

Reed Roller Bit Company..... 45
Reading Iron Company.....
Regan Forge & Engineering Company ..... Third Cover
Joseph Reid Gas Engine Company.....
Remington-Rand Business Service.....
Republic Supply Company.....
Republic Iron & Steel Company..... 38
Republic Iron & Steel Company, Toncan Division 51
Resistcor Engineering Corporation....
Rice Hotel .....
Roosevelt Hotel 121

Second National Bank.....107
J. E. Shaffer Company.....
Shaffer Specialty Company.....
Shaffer Tool Works.....
Sheldon Machinery Company.....
Sinclair Refining Company..... 43
S-K-F Industries .....
A. O. Smith Corporation.....
E. M. Smith Company 54-55
H. C. Smith Manufacturing Company.. 15
Howard Smith Company.....
South Chester Tube Company.....
Southern Engine & Pump Company...108
Southern Pacific 110
Southern Mill & Manufacturing Co....
Spang & Company.....
Spang, Chalfant & Company.....
Eugene C. Stacy .....
Standard Supply & Hard-ware Co.....
Star Drilling Machine Company.....
George Steiner .....
Jesse R. Stone.....114
Stoody Company .....
Sullivan Machinery Company.....

Templeton, Kenley & Company.....
Texas Creosoting Company.....
Texas Iron Works.....
Timken Roller Bearing Company..... 31
Titusville Iron Works..... 6
Triad Products Company.....
Trimont Manufacturing Company..... 69
Tyler Tube & Pipe Company..... 74

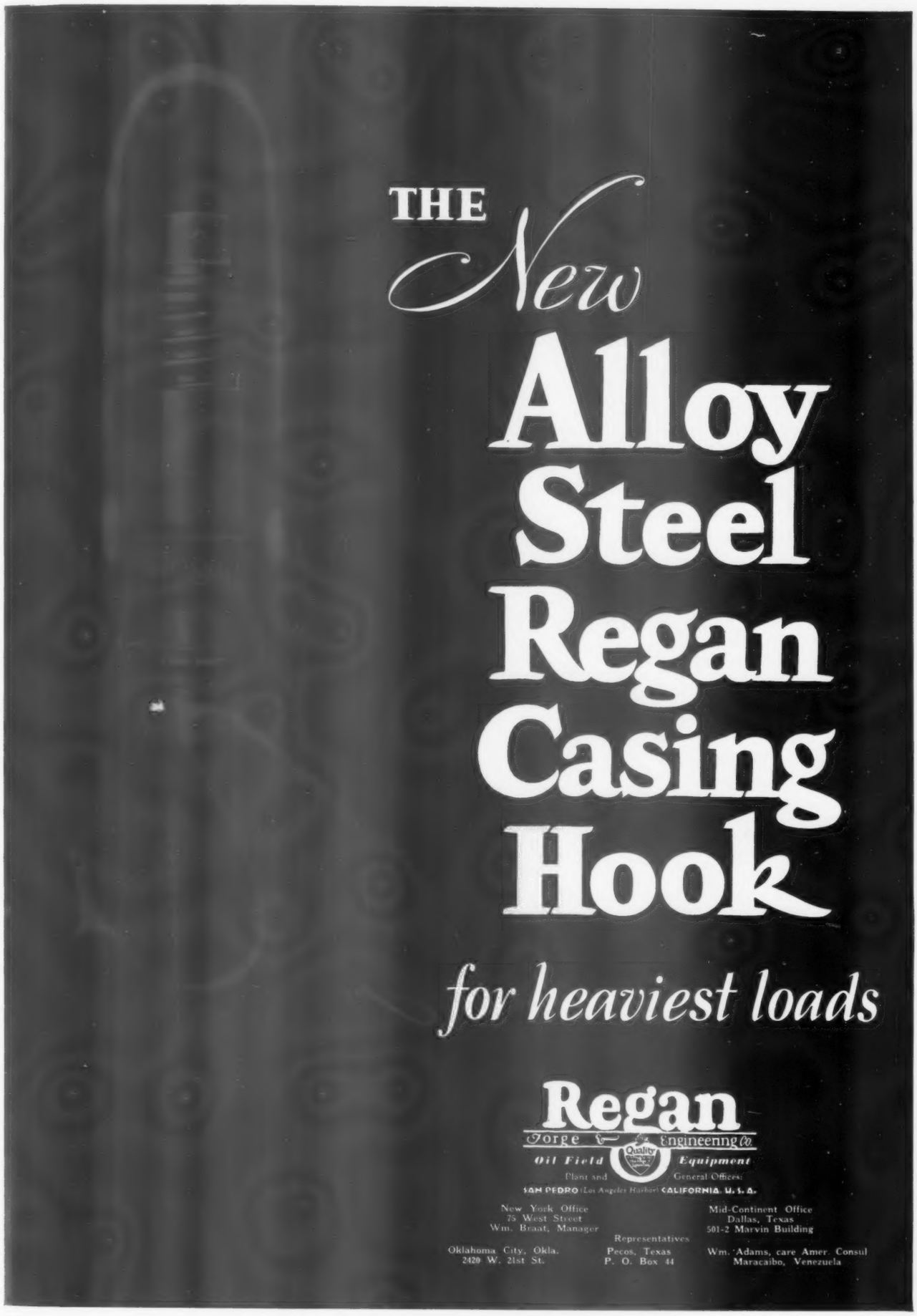
Union Carbide & Carbon Corporation..115
Union Wire Rope Corporation.....
United Tractor & Equipment Corp.....
Universal Engineering Company.....

Vez Company .....
Victaulic Company 71
Victor Balata & Textile Belting Co...
Vulcan Steel Tank Corporation.....

Wagner Electric Company.....
Waukesha Motor Company 87
C. W. Webster 114
Westcott Valve Company.....105
Westinghouse Electric & Manufacturing Company 73
Calvin Wheat Studios.....114
Wickwire-Spencer Steel Company.....
Wico Electric Company.....
Wiemann-Kemmerer-Wright, Inc. 13
Williamson Wire Rope Company.....
J. H. Williams & Company.....
Wilson Supply Company.....
Wilson-Snyder Manufacturing Company
W-K-M Company .....
Word Specialty Manufacturing Co. .....
T. T. Word Supply Company.....
Worth Hotel .....
Wright Manufacturing Company.....
Wyatt Metal & Boiler Works.....

Yale & Towne Manufacturing Co. ....

Every precaution has been taken to insure accuracy in listings in this Index to Advertisers, but last minute changes may result in omissions or erroneous listings for which we ask your indulgence. This index is for the convenience of readers and we do not assume liability for improper listings


THE New Alloy Steel Regan Casing Hook
for heaviest loads
Regan
Forge & Engineering Co.
Oil Field Equipment
Plant and General Offices:
SAN PEDRO (Los Angeles Harbor) CALIFORNIA, U. S. A.
New York Office
75 West Street
Wm. Braat, Manager
Mid-Continent Office
Dallas, Texas
501-2 Marvin Building
Representatives
Oklahoma City, Okla.
2420 W. 21st St.
Pecos, Texas
P. O. Box 44
Wm. Adams, care Amer. Consul
Maracaibo, Venezuela

STEEL

Only the finest quality alloy steel is used in the manufacture of Hughes Rock Bits and Cones. This steel is purchased from a reliable source with the variation in chemical analysis specified.

All vital parts are made from specially selected steel bars that have passed an exceptionally rigid inspection for metallurgical defects, both by the manufacturer and by Hughes Tool Company.

Use HUGHES Rock Bits & Cones *for Superior Performance*

HUGHES TOOL COMPANY

Service Plants
Los Angeles
Oklahoma City

Main Office and Plant
HOUSTON, TEXAS

Export Office
Woolworth Bldg.,
New York City